

AMERICAN FARMER.



"O FORTUNATOS NIMIUM SUA SI BONA NORINT
"AGRICOLAS." Virg.

Vol. VII.

BALTIMORE, DECEMBER, 1851.

No. 6.

IMPROVEMENT OF COTTON AND CORN LANDS.

TARBORO', Edgecomb Co. N. Carolina, }
Oct. 9, 1851. }

MR. SAMUEL SANDS—Sir:—Enclosed I hand you the names of sixteen more subscribers, the fruits of an hour's labor yesterday.

In writing about subscribers, I am reminded how much easier it is now than it was six or eight years ago, to prevail on those who comprise the farming community, to no longer neglect their interests by refusing to avail themselves of the information, so cheaply supplied by yours and kindred papers.—Then it was up-hill work. Prejudice against "book farming" was the prevailing sentiment. But these times are past and gone. Man is learning not to shut his eyes to truth for fear he may see error.

My main purpose at this time, is to lay before you the analyses of four specimens of soil, taken from a "tract of land" I recently purchased, lying on or near Tar river. Having no experience, practically, in farming, and unable to decide, with the analyses at hand, to what extent the soils in question are deficient in the ingredients that compose a perfect soil, and in what way these deficiencies can be most economically supplied, I concluded to seek the desired information at your hands.

Specimens A, B and C, were taken from the arable land, of which there are about 600 acres. "A" has been fairly manured with cotton seed, composted with ditch banks, for the last eight or ten years, and planted to cotton or corn. The yield has been invariably fair, seldom falling short of 1000 lbs. of "seed cotton" or 25 bushels of corn per acre. The custom is almost universal here, to plant "Peas" between the rows of corn. What the average product per acre is, I cannot say, as they are not gathered, in many instances, but for seed—the operation being a tedious one. Hogs intended for fattening, are turned upon them as soon as the corn is housed. In this way they pay as well probably as any other. It would not be an exaggeration, I think, to set down the yield on this land at 20 bushels. It is conceded by all acquainted with the soils affording these specimens, that they are not surpassed anywhere in the production of the "Field Pea." May not this fact be turned to good account in improving the soil? On the Roanoke, some experiments have been made with

surprising results, from the application of a bushel of Plaster to the acre, on peas sowed broadcast, during the early stage of their growth, and plowing in the vines about the 1st of October, or immediately after the hogs had fed off the peas.

Specimen "B" differs materially from "A" in color, being a very dark soil, while the latter is a brownish or chocolate. Naturally, this is the best soil on the farm, or at least on the cultivated parts of it. The subsoil is a stiff blue clay, having a strong sulphurous smell, and is doubtless underlaid by marl.

Specimen "C" is a sample of a large portion of the "open" land, and although the former owner considered the cultivation of it remunerative, I feel unwilling to continue to do so, unless, perchance, there is no probability of being repaid for the effort to make it more productive. A glance at the analysis will not fail, I apprehend, to give you at once an insight into the character of this soil. It has "been robbed of its good name, and left poor indeed." It wants that body or compactness, necessary to retain the better portions of all putrescent manures. Still the remedy is at hand, I hope. But as to that, you must decide after reading farther.

There are 300 acres of wood land, lying between the cleared land and the river, for the most part pretty heavily timbered with oak, hickory, gum, &c. Occasionally the water rises high enough to overflow the banks of the river, and inundate the greater part of the woodland. Interspersed here and there—sometimes running parallel with, at others making out at right angles from the river—are ravines or hollows, in which the water makes its way during these freshets, and deposits a sediment of a brownish hue, which with the leaves and other vegetable matter—the accumulation of centuries—forms a compost, made by nature's "canny hand," combining, I suppose, nearly, if not all the elements, both organic and inorganic, to restore the light land above mentioned, at least to its original fertility, if applied with a liberal hand.

Specimen "D" was procured from a "ridge" lying between two of the before named "hollows." My object in having this specimen analysed, was to ascertain if it was adapted to the cultivation of clover and the artificial grasses. This "ridge" is not beyond the reach of high water, but is some times covered for weeks together.

I have tried, in a manner not very perspicuous though, to describe what sort of soil or soils I shall "flush my maiden" hoe upon. 'Tis true, some two years ago I bought a farm of fifty acres, and, as the neighbors said, was fool enough to pay \$20 per acre for it, when it was not worth, intrinsically, half that price. I planted a few acres in corn, and by dint of heavy manuring, and superior cultivation, succeeded in making six barrels, on ground that had not produced three to the acre for many years before. The neighbors would have it, that every bushel of corn cost me a dollar, which was not the case, even if, in the estimate they made, nothing was allowed in the expenditure for manure for the benefit that future crops would receive from its application. Be this as it may, I sold the farm, after a possession of less than two years, for \$48 per acre. Notwithstanding my friends declare I lost money by the operation, suffice it to say, I am pretty well satisfied with that "hogshhead of sugar," and am willing to be fooled again in the same way, if you will but help me in the start.

Now, sir, with all the lights before you, and a readiness on my part to make an outlay of money and labor, commensurate with what may be clearly demonstrated as necessary, to the end that good crops may be produced and fair profits realized—will you undertake to be my prompter, and state what course you would pursue in the premises.

Swamp mud, river deposit, ditch banks, are at hand—ashes and charcoal may be had for the burning. Stable manure, human ordure, cotton seed, bones, woollen rags, &c. may be husbanded. Marl abounds in every section of the country. Lime, plaster, bone-dust and guano can be laid down at my farm and many others, almost where they are to be applied, at 30 cts. freight per barrel, from New York or Baltimore. Now, if any or all of these can be used to advantage on our lands, I do not see what is to hinder us from giving them a fair trial. But we wish to go to work advisedly.

It may not be amiss, in conclusion, to state, that I design to make *Corn* and *Cotton* the main crops, while Peas, Rye, Oats, &c. will be considered more as adjuncts to facilitate the improvement of the land. Can you suggest a system of rotation, in crops, to further the latter object, without prejudice to the production of these two great staples?

"PANOLA."

	A	B	C	D
Moisture,	.35	1.51	.22	6.
Organic matter,	2.66	7.	2.42	4.38
Fine quartz sand	93.	88.	93.32	79.97
and Sil. Lime and Magnesia				
Alumina,	2.44	2.20	1.32	8.
Lime,	.80	.60	.40	.54
Magnesia,	.24	.10	.06	.16
Oxide of Iron,	.22	.25	.09	.60
Oxide of Manganese, trace		.02	trace	.03
Potash,	.03	.03	.02	.01
Soda,	.04	.02	.03	.02
Chlorine,	.10	.04	.15	.04
Sulphuric Acid,	.13	.21	.16	.22
Phosphoric Acid,	trace		trace	.02
Car'ic Acid and loss,	.01	.02	.03	.01
	100.	100.	100.	100.

Reply by the Editor of the American Farmer.

As our friend, "Panola," has appealed to us, to point out a practicable way of improving his soils,

so as to enable him to increase their products, and declared his willingness "to make an outlay of money and labor, commensurate with what may be clearly demonstrated as necessary to the end that good crops may be produced, and fair profits realized," we take pleasure in undertaking the task of being his "prompter," though we do so in a spirit of becoming diffidence, and should shrink from the responsibility of prescribing, if the remedy was not so obvious as to render it of easy attainment; for we are altogether pretensionless, and presume not to be learned in such matters, nor to attempt the elucidation of those which are as hidden books to us.

The chief object which our friend has in view, as he states, is the growth of *good crops of corn and cotton*, while the other products of his farm, as "Peas, Rye, Oats, &c. are to be considered "as adjuncts, to facilitate the improvement of his land."

With these avowals and purposes before us, we are encouraged to proceed. First of all, let us inquire, what are the *chief* elements which enter into the composition of *Cotton* and *Corn*?

An analysis made by professor *Shephard* gave the following results of the wool of Cotton:—

Analysis of the Wool.

Carbonate of Potash with trace of soda,	44.29
Phosphate of Lime,	25.34
Carbonate of Lime,	8.97
Carbonate of Magnesia,	6.75
Silica,	4.12
Sulphate of Potassa,	2.90
Alumina,	1.40
Chloride of Potassium,	6.23
Sulphate of Lime,	
Phosphate of Potassa,	
Oxide of iron, a trace,	
	100.

The analysis of the *seed of Cotton* shewed the following results:—

Phosphate of Lime, with traces of Magnesia,	61.34
" of Potassa, with traces of Soda,	31.74
Sulphate of Potassa,	2.65
Silica,	1.68
Carbonate of Lime,	.47
" of Magnesia,	.37
Chloride of Potassium,	.35
Carbonate of Potassa,	and loss 1.00
Sulphate of Lime,	
Sulphate of Magnesia,	
Alumina and oxide of iron,	
	100.

A more recent Analysis, of the *stalk* of the Cotton plant, made at the laboratory of professor *Norton*, of Yale College, exhibits the following as its constituent elements:—

Charcoal and Sand, (accidental),	3.76
Silica,	2.64
Lime,	19.82
Magnesia,	3.04
Carbonic Acid,	14.32
Phosphoric Acid,	28.04
Chlorine,	0.53
Sulphuric Acid,	2.83
Potash,	24.09
	99.08

Now then, we have a starting place—an index to point to what are the necessary ingredients which essentially comprise the *inorganic* wants of the Col

ets, and
utlay of
may be
end that
fits real-
task of
a spirit
from the
edy was
ainment;
presume
attempt
en books

in view,
corn and
farm, as
ered "as
t of his

re us, we
let us in-
enter into

gave the

of the Wool.

44.29
25.34
8.97
6.75
4.12
2.90
1.40

6.22

100.

ewed the

sia, 61.34

a, 31.74

2.65

1.68

.47

.27

.35

1.80

100.

of the Col-

essor Nor-

wing as in

3.76

2.64

19.89

3.04

14.32

28.04

0.53

2.83

24.09

99.08

an index to

ents which

of the Col

ton plant. If we look at the preceding tables, we find that *Lime, Potash, Phosphoric acid, and Phosphate of lime, Sulphuric acid, Magnesia, and Carbonic acid*, (the latter organic) are the chief food upon which it feeds. The question of feed being settled, the next question we have to ask ourself, is,—are there sufficient quantities of these various substances in the soils of our friend, "Panola," to satisfy the wants of the Cotton plant, and encourage its luxuriant growth?

We shall, in the first place, address ourself to the soil of "A.," and ask ourself, has it enough lime within its body? The analysis says it has 8-10ths of 1 per cent., which, according to our calculation, will make the quantity to the acre, when ploughed 6 inches deep, about 240 bushels; and if so, there is enough in it for all present purposes, so far as a supply to the plant may be concerned, though more might be advantageously used, to increase the absorbent and retentive properties of the soil.

The next substance in order, is *Potash*,—of this there is a deficiency in the soil, which should be supplied either by *Ashes*, or the *Carbonate of Potash*,—the former we should prefer, because, in applying ashes, many other substances of which the plant stands in need, would be also supplied, as *Carbonic acid, silicic acid, phosphates of iron, lime and magnesia, lime, Magnesia, Soda, oxide of iron, Chlorine, phosphoric acid, Sulphuric acid, and organic acids*.

Phosphoric acid, and Phosphate of lime, come next, substances greatly demanded by the Cotton plant in all its structures,—and of this there is but a trace in soil A.; hence then, to meet these demands, it must be artificially supplied to the soil, and the readiest way to do this, we apprehend, is to give it a dressing of bone-earth, or of guano,—or, indeed, both, perhaps, would be preferable, the former substance as a source of future supply, the latter as a present one.

Of *Sulphuric acid*, the supply in soil "A.," we deem sufficient, though we believe a bushel of plaster per acre, if strewn over the land after it may have been prepared, would be of infinite service, in attracting and husbanding the enriching gases of the atmosphere.

The supply of *Magnesia* in soil "A." is ample.

The *Carbonic acid* required by the plant, will, we think, be abundantly supplied by the "organic matter" in soil "A.," and by the applications of liberal portions of the composts, formed by "nature's canny hand," which so abound on our friend's estate, and which he has both the courage and the enterprise to apply. In those substances which he enumerates, he has, as he very correctly remarks, both the *organic and inorganic elements* calculated to improve his land, if he should but give it enough of the named substances. And we will here venture the assertion, that without the aid of cotton seed, he never could have made 1000 lbs. of "seed cotton," or 25 bushels of corn, to the acre, without the other substances comprising his composts, were rich in the elements of bone earth, as both cotton and corn are greedy eaters of that kind of diet, and cannot do without it. It may be, however, and we think it probable, that, in the subsoil, the plants found a supply.

The per centum of *organic matter* in soil "A.," is not large, but on the contrary small, and but for the applications of the composts which our friend speaks of,—the ploughing down of the pea-stubble,

and the grazing of his hogs on the land—would long since have become exhausted.

The soil of analysis "B.," except in its quantities of fine quartz sand, and silicate of lime and magnesia, organic matter, and the entire absence of phosphoric acid, is so similar in its quantitative and qualitative constituent elements to that of "A.," as to require a similar treatment. Of *organic matter*, it has a very unusually large quantity for land that has been long in cultivation. Seven per cent. of organic matter is not often to be found in such soils; and we should take it, that its absorbent and retentive powers are much greater on that account, than are those of the soil of "A." Its quantity of lime, according to our calculation, if the soil be ploughed 6 inches in depth, would be about 180 bushels to the acre,—a quantity ample for all present purposes; but we are disposed to believe, that, if 50 bushels of freshly slaked lime per acre, were added to it, as a top-dressing, it would increase the decomposing powers of the land, and render its organic remains much more readily available to the growing crops, and as a consequence, increase its products.

The soil represented by analysis "C.," is deficient in *alumina*—clay—and would be much improved, if from 750 to 1000 bushels of clay, per acre, were added to it, and thoroughly incorporated therewith, by ploughing, cross-ploughing, and harrowing. Such addition would greatly increase its capacity to hold manure, absorb and retain moisture, and attract the enriching constituents of the air, and, as a necessary result, increase its productive powers. Of lime, it has enough for some years, though a hundred bushels of marl, per acre, or 50 bushels of freshly slaked lime, would be of essential service to it. Looking to the analysis—with the exceptions we have pointed out—it should be treated in the same way we have indicated as the proper treatment for soil of analysis "A."

We have thus briefly stated the wants of soils "A.," "B.," and "C.," in relation to their growth of Cotton, and we here seize the occasion to say, that, so far as Corn is concerned, they are just as applicable to it as to cotton, for it so happens, that the food which they most delight in is peculiar to each plant, as the following analysis of corn will show:

ANALYSIS OF CORN.

	of the grain.	of the cob.
Carbonic Acid,	trace	9.455
Silicic Acid,	850	10.320
Phosphoric acid, a lit- tle per-oxide of iron }	49.210	13.550
Lime,	0.075	3.833
Magnesia,	17.600	6.743
Potash,	23.175	34.400
Organic Acids,	5.700	6.430
Soda,	3.605	11.495
Sulphuric Acid,	0.515	1.336
Sodium }	0.160 }	1.980
Chlorine, }	0.295 }	

From the course of our remarks, our friend will have been able to form a tolerably correct view how we think he should proceed to improve his land; but as we always like to be distinctly understood, we will enter somewhat into detail, as to the mode of preparing and applying his meliorating substances.

First then, as to the application of bones. If our friend would desire to look alone to present action, without regard to the future improvement of his

land, the most eligible way of applying them will be to dissolve them with sulphuric acid. Upon the mode of using and dissolving the bones, Liebig gives the following:

"But the form in which they (bones) are restored to the soil does not appear to be a matter of indifference. For the more finely the bones are reduced to powder, and the more intimately they are mixed with a soil, the more easily are they assimilated. The most easy and practical mode of effecting their division is to pour over the bones, in a state of fine powder, half of their weight of sulphuric acid, diluted with three or four parts of water. When the bones are dissolved, and become of a pasty consistence, they should be mixed with, say four times their own bulk of ashes, so as to prepare them for sowing. After they have been sowed as a top-dressing they should be harrowed in."

The plan we would pursue, is this: we would mix the bone-earth, in the proportion of 5 or 10 bushels to the acre, with 50 bushels, or whatever quantity of ashes we meant to apply to the acre; moisten the bones pretty thoroughly before mixing them with the ashes; throw them into a heap, and let them remain a few weeks prior to sowing them; taking care to examine them every few days, in order to prevent the heat from being carried too far. If, by inserting a stick, we found the mass *hot*, we would shovel over the heap, let in air, and thus depress the heat.

Prior to applying the ashes and bone mixture, we would spread at least 20 loads of the compost, to be formed out of the materials which our friend speaks of, per acre,—when spread, we would sow 200 lbs. of guano on each acre, which should be previously mixed with 50 lbs. of plaster, and immediately plough it under with the compost; we would then harrow the ground, and sow over it the mixture of bone-earth and ashes; then harrow and roll that in, when the ground would be fit either for planting cotton or corn. Thus treated, we have no hesitation in affirming, that any soil that now yields 25 bushels of corn, may be made to bring from 50 to 60 to the acre, and that the cotton crop will be increased in a ratio to pay for the expense of the manure, while the land will continue fruitful for 8 or 10 years, if aided by a compost formed of the materials that our friend has named, 2 bushels of bone-earth, cotton seed, and farm-yard and stable manure, every time he may submit it to the plough. Nay, we believe, that, by such treatment, it will continue to improve in its productive powers, until it shall have reached the maximum point of production; especially will such be the case, if he should occasionally turn in a crop of clover, or peas, and feed his hogs on the pea crop, as he does now.

The *outlay* to cover the mode we prescribe, may be heavy at first, but the increase in crops will more than reimburse it, besides giving a lasting character to the improvement of the soil. As our friend has *marl* at command, in three or four years hence, he should give his land a dressing of a hundred bushels to the acre of it, to replenish the lime abstracted by the crops.

If it has been his practice, hitherto, to plough *shallow*, say 3 or 4 inches, let him at each succeeding ploughing, increase the depth 1 or 2 inches, until he shall have reached a depth of 8 or 10 inches. By so doing, he will increase the pasturage of his crops, impart increased capacity to his soil to retain moisture, and most probably, find in the

subsoil, thereby turned up, several valuable mineral substances, as lime, potash, phosphoric acid, magnesia, and other substances that are now locked up from the plants.

If "*Panola*" should treat his land as we have recommended, he may add *wheat* to his system of culture; in which case, he should always sow 12 lbs. of clover seed, and 2 bushels of orchard grass seed, upon every acre of land he may have in that grain. But whether he adds wheat, or not, to the articles at present cultivated by him, we hold it to be important, that he should put one-fifth of his arable land in clover and grass, to keep up the supply of organic matter in the soil and improve his ability to keep stock.

As to a system of *rotation*, we would let oats follow the *corn*, or cotton crop, and sow *clover* and *orchard grass* seed upon the oats after they had come up and were two or three inches high, and roll the clover and grass seeds in. The oats should be sown as early as the ground could be put in good order. The clover seed should be put in first, and the orchard grass seed immediately afterwards; the latter seed should be spread on a barn-floor, moistened and mixed with ashes, so as to separate the seeds, and render them easy of being sown.

The soil represented by analysis "*D*," is generally an excellently constituted soil for *clover*, and the artificial grasses, with the exceptions which we shall endeavor to point out. We think, from the high per centage of "*moisture*," shown by the *analysis*, that it contains too much water, for the healthful vegetation of clover and the superior artificial grasses to be carried on advantageously, without it be previously drained.

Its supply of *organic matter* is ample; its proportion of *alumina* and *sand* well adapted to grass culture; its supply of *lime* is ample, so also, its *magnesia*, *oxide of iron* and *manganese*. In *potash*, a substance in which clover and the grasses greatly delight, as also in soda and chlorine, it is deficient.

Its supply of *sulphuric acid*, is sufficient for many years, but it *lacks* a supply of *phosphoric acid*, an indispensable ingredient to the composition of a good soil.

To prepare the land represented by analysis "*D*," to grow and sustain a heavy crop of clover and grass, for a series of years, it should receive in addition to a good dressing of compost, fifty bushels of ashes and five bushels of bones, prepared as we have before directed, to be sown broadcast, harrowed in, and rolled, at the time of seeding. The clover and grass seeds may be sown to *oats*, as before recommended. If so sown, the crop of oats will more than cover the expense of improvement, so that our friend will have his meadow free from that charge.

On the soil of "*D*," we would sow a mixture of *Clover*, *Orchard grass*, *Timothy*, and *Red-top* grass seeds, and regulate the quantities per acre, thus:—12 lbs. *clover seed*, 1 bushel *orchard grass*, 1 peck of *timothy*, and $\frac{1}{2}$ bushel of *red-top*. This would ensure a good stand of clover and grass plants, and prevent the soil from being occupied by noxious weeds. Every second fall, the meadow should be harrowed, and each acre treated to four loads of compost, composed in the proportion of 1 bushel of salt, 1 bushel of bone-earth, and 5 bushels of ashes. The meadow should be harrowed, then the compost broadcasted upon it, after which it should be rolled. By pursuing this course, a meadow thus formed and treated may be kept in pre-

-NO. 6.

able mine-
poric acid,
ow locked

e have re-
m of cul-
ow 12 lbs.
grass seed,
that grain.
he articles
t to be im-
his arable
supply of
his ability

et oats fol-
clover and
they had
high, and
ats should
be put in
out in first,
terwards;
arn-floor,
o separate
sown.

" is gene-
lover, and
ons which
own by the
er, for the
erior ar-
ageously,

s propor-
grass cul-
its mag-
potash, a
es greatly
deficient.
for many
e acid, an
tion of a

ysis "D,"
lover and
ive in ad-
y bushels
red as we
cast, har-
ng. The
ts, as be-
p of oats
ovement,
ree from

mixture of
-top grass
e, thus—
1 peck of
ould en-
ants, and
noxious
should be
loads of
1 bushel
ushels of
red, then
which it
e, a mea-
in pro-

ductive heart for twenty or thirty years, by occasionally casting diminished quantities of grass seeds over it, at the time of harrowing, top-dressing, and rolling.

If "*Panola*" should find the soil "D," wet, as we have suggested, and drain it, it would be well to let the drains have time to relieve the soil of its superabundant water, before he ploughs it up, as by the percolation of the water to the bed of the drain, he would get rid of many mineral substances in a low state of oxidation, which, if brought to the surface, might prove injurious to the plants. Clover and the grasses flourish best in a deep soil, therefore we desire our friend to bear this fact in mind, when he may be determining upon the depth he designs having the soil of "D" ploughed.

On any of the soils comprised in the analyses "A," "B," and "C," subsoil ploughing would be of great advantage. On the soil of "D," if wet, and it should have to be drained, it would be injurious to subsoil, until at least a year after it may have been so drained.

HAPPY EFFECTS OF SALT, PLASTER, AND ASHES ON MEADOWS.

MT. PLEASANT, JEFFERSON CO., VA. }
Oct. 18th, 1851. }

Mr. Editor:—Permit me to bear testimony to the value of your paper, and the useful hints given by it. Noticing some of your remarks about meadows, I was determined to try what amount of hay I could raise on a small meadow I had in front of my dwelling. During the spring and winter of last year I manured the higher parts of it with wood-pile manure, and the low ground with clay from a cellar. I harrowed it, sowed three bushels of plaster, salt, and leached ashes mixed together, and then rolled it over with a common roller. I thus almost doubled the average yield of the three previous years. The quantity of ground measured off and calculated by my friend H. Benton, Esq., of Loudon Co., is 5 acres, 1 rod and 12 perches. The average number of loads the three previous years was 19—that of last year was 32. The size of my shelvings on which the hay was hauled, measured by the same gentleman, is as follows:—16 feet 2 inches long, by 6 feet 3 inches wide, as much as 4 good horses could conveniently pull was put on. My friend, Edward Massey, Esq., late representative of Clarke and Warner, was spending a few days with me whilst I was making the hay, and knows the statement with regard to the quantity to be correct. I suppose myself, that each wagon load would have turned out more than a ton when entirely dried by age. The grass was a mixture of timothy, herds grass, and clover. The meadow is rolling ground.

Yours truly,

CHARLES YATES.

P. S. I observed in your last number a description of a Stump Extractor, which I think would be of great advantage to farmers for clearing their lands and roads of stumps and other obstructions. I have dug up with my force a great number of stumps of locust, white oak, &c., in order to prepare my land for the drill and reaper, and find it tedious. I would suggest that some one in each county should procure one of great power, and take it around and pull up the stumps for those who are troubled with them. I doubt not they would be willing to allow a liberal compensation for its use.

C. Y.

WORK FOR THE MONTH.

DECEMBER.

Before we proceed to point out the things requiring attention on the farm and plantation, we will make a few remarks on the crops of the past season. Comparing the various statements which we have read in the local papers throughout the Union, with those which we have seen in letters, and those derived orally from private sources—after making all due allowances for exaggerations arising from sinister motives, on the one hand, and depreciations, proceeding from kindred motives on the other, we have come to the conclusion, that the *wheat* crop has been a more abundant one than has been raised for many years, whether we look to its aggregate amount, or to its acreable product. There have been less than average yields in some portions of the country, but these have been more than over-balanced by the unusually large products in others. So that, taken as a whole, the crop of the Union has been far above an average one—while accounts from the whole wheat growing region, represent the quality as unusually good.

The *Tobacco* crop, on the other hand, has proved an exceedingly short one; and if this fact be taken in connexion with the comparatively small quantity remaining over from former years, both in this country, and in Europe, we can see no just reason why its price should not be greatly appreciated, as there is nothing to depress the demand, for chewing and smoking will go on, while *shortness* of supply must, as a necessary consequence, resulting from the laws of trade, increase its market value. To *planters*, then, we say, be chary how you sell your tobacco,—for tobacco will be tobacco, for at least a year to come, and longer, unless next year's crop should prove a superabundant one.

The *Cotton* crop, though a diversity of opinions prevail, we believe,—the breadth of planting being considered,—has been less than an average one, and we hope that the price may be commensurate with the interests of the producers.

We come now to speak of the *Corn* crop, the great crop of our country, after all,—and of that, we hazard nothing in saying, that, in quantity, it has not been, taking the breadth of the state, more than two-thirds of an average crop. Whether this decrease of product will operate to enhance its market value, involves questions and circumstances that we do not feel ourself prepared to solve, but sincerely hope that it may.

The *Oat* crop is short beyond all former precedent, and we can see nothing to prevent an advance in price.

The *Rye* crop has been a fair one.

The *Potato* crop, upon the whole, we think has turned out upon a par with that of last year, and we think prices must be maintained.

Having thus briefly stated our views in relation to crops of the past season, we will endeavor to state how the business of the month should be conducted.

Fattening Hogs.—As hogs fatten better under the influence of moderate weather, than they do in cold, their feeding should be carefully attended to, so as to hasten their preparation for slaughter. Regularity in feeding and watering should be observed. Their pens should be frequently cleaned out, their sleeping apartments should, at all times, be kept clean, and well provided with good comfortable

bedding, composed of straw or leaves, which should be changed at least once a week. Their troughs should be washed daily, and the hogs never left without a supply of charcoal, or rotten wood, and salt and ashes, to correct the acidity of their stomachs. As we advised in former notices, every pen should be so arranged as to have a yard attached, in order that the hogs could come down to the earth and indulge in their favorite habit of rooting; and such yard should be, at all times, well supplied with rough materials to be converted into manure, as there is no animal, whether he moves on two or four legs, who practically understands the manipulation of manure better than does the hog: give him the materials, and he will work it up into the food of plants, with a skill that would do no discredit to a chemist. A pen of twenty hogs, well supplied in this respect, would compost as many loads of manure in two or three weeks. To encourage them to perform this kind of work, it is well to strew over the yard, every few days, a few handfuls of corn; thus encouraged, they go to work with a will, and very soon turn up the whole body of material, distributing their own excrements throughout the mass, thereby greatly adding to its enrichment and value. A pen of 20 hogs, supplied in the way we suggest, would, during the period of being fattened, make 60 loads of manure, a quantity sufficient to fertilize 3 acres of land so as to make it competent to grow 40 or 50 bushels of corn to the acre. This estimate of the value of excretory matters, solid and liquid, of fattening hogs, as they are many times stronger than those ejected by the same animals while running at large, their additional strength being imparted by the superior quality of their food, will not be considered exaggerated. Of the solid excrements of the hog, there has been no ultimate analysis made that we are aware of, but those of the well fed fattening hog, has, by analysis, been estimated to contain, in 100 parts, Geine (mould) 23 parts, Salts, 1.2 part, and of carbonate of ammonia, 15.82 parts, whereas, it has been ascertained that the *Urine* of the grain-fed hog, contains of Urea, with a little slime and albumen, 5.64 per cent,—and the Urea may be considered to be so much ammonia—of salts, consisting of common salt, muriate of potash, gypsum, chalk, and glauber salts, 1.76 per cent. The solid excrements too, are comparatively rich in phosphates. So then, if we combine both the solid and liquid elements of the fattening hog, as they will be, where his yard is well supplied with absorbent materials, we cannot appreciate the manure thus made too highly, as its volatile parts will, to a great extent be economised; of this latter fact there can be no question, where plaster, or pulverized charcoal may be used and strewn over the yard, as it ought to be, every few days, to fix the ammonia.

Gathering materials for Manure.—This is a good time for collecting rough materials to spread over your cattle yards, to be converted into manure by the droppings of your stock throughout the winter. In the selection, you cannot well go amiss; for it matters but little whether you cover your yards with muck from the marsh, with river or creek mud, scrapings from the roads and headlands, leaves and mould from the woods, or any such substances, it will all be made into excellent manure by spring, provided your cattle yards be made in a dish like form, higher on the sides than in the centre, to prevent the wasting away of the liquid portions of the mass, and further, that care be observed to have the

surface occasionally covered with the fixing agents recommended above.

Fire-wood.—Immediate steps should be taken to cut down, and haul into the yard, and pile up, a full supply of fire-wood to last for twelve months. The comfort of one's family depend so much upon attention to this duty, that no time should be lost in carrying this recommendation into effect.

Winter-ploughing.—All tenacious clay lands, intended for spring culture, should be subjected to winter ploughing, and if they need liming a more suitable season could not be desired to give them a dressing of lime or marl, than when such lands may be ploughed in winter. We would repeat our caution—Clay soils should never be ploughed when wet.

Milk-Cows.—Let these, in addition to their long food, receive succulent messes, night and morning. They should have good dry bedding in a moderately warm stable or shed, be watered at every meal, and curried and brushed down twice a day. Exercise in the yard at mid-day, in good weather, is conducive to their health.

Young Stock.—These should be provided with a tight shed, have a yard for exercise, and be so fed as to keep them continuously growing. They should in addition to hay or fodder, receive a feed of grain daily. Oats is the best for such purpose. They should be salted twice a week; it would probably be better to give them a mixture of equal parts of ashes, lime, and salt.

Sheep.—Provide your sheep with a moderately warm shed, well bedded, allow them free access to dry well bedded yards. Keep salt in a trough to which they can resort at pleasure, and also pine boughs to browse upon. If you have no pine, a little salt strewn over tar in a trough will answer instead of pine boughs. The food of lambs should be 2½ lbs. of hay each daily, with occasional feeds of roots or meal. The grown sheep should receive 3 lbs. of hay or fodder daily, with occasional messes of roots or meal.

Corn.—If your corn has not been harvested, lose no time in gathering it, the longer it remains in the field the less in quantity will it grow, for in despite of your vigilance, two and four legged animals will appropriate more or less to their own use.

Breeding Mares, and Cows and Heifers in Calf.—These animals have to support their young as well as themselves, and, therefore, should be generously fed and cared for. We do not mean that you should keep them as fat as London Aldermen or show beasts; but we do mean, that you should keep them far above the line which merely keeps body and bones together. No animal in young should be fed upon very low diet; for, to thus keep them, is the sure way to make them endure much suffering, and to stint their young of much of their "fair proportions." Dry warm sheds, bedding, and dry yards with southern, or south eastern exposures, are indispensable conditions to the preservation of health.

Fencing.—Cut and haul into your barn-yard all the fencing you may need next year, to give employment to your hands in wet weather, in giving shape and fashion to your posts and rails.

Gates.—Let the access to your fields be through gates, and not bars.

Tools and Implements.—Examine every thing of the kind; have those needing it repaired, and put all away under cover.

Draining and Ditching.—There are often periods during winter, when such work can be carried on.

all such periods should be occupied in relieving your wet lands from water.

Sleighs and Carriages of pleasure.—Have these put in tip-top order for the benefit of the ladies of your family. Every wife and daughter indulges in the laudable ambition of seeing their sleigh and carriage among the best of the neighborhood, and it should be the pleasure of the husband and father to gratify them, as such ambition is a virtue that should be cherished.

In conclusion, as the birth day of our Savior will have passed before our next greeting, permit us to tender you with the compliments of the season, and to indulge the hope, that you may not only enjoy the coming advent in health and happiness, but that you may live to partake of many, many more, surrounded by every element of comfort, pleasure, and enjoyment.

WORK IN THE GARDEN.

DECEMBER.

There is not a great deal to be done in the garden this month, but still there is something, and that something should be attended to.

Cauliflower and Cabbage Plants.—Whenever the day is mild, the plants in frames and under glasses should be uncovered during the middle of the day. Exposure in such weather is necessary to prevent them from drawing up and becoming weak. Decayed leaves should be picked off. Matting or straw should be placed over the frames or glasses every night.

Lettuce Plants on warm borders in the open ground, should be protected by mats thrown over a temporary frame.

Small Sallading.—Seeds of all kinds of small sallading should, at this season of the year, be sown in hot-beds.

Mushroom beds must be protected from wet and frost.

Forcing Asparagus.—Hot-beds should be now made to force asparagus for cutting in the latter end of January or beginning of February.

In the Southern States, where the winters are mild, onion, carrot, parsnip, beet, lettuce and various other seeds might be sown on warm borders well exposed to the south, and protected on the north and west. Should such sowings be made, and apprehensions of severe weather be indulged, all such plants could be effectually protected by driving down a few forked stakes, laying poles across them, and covering the poles with alternate layers straw, corn-stalks and brush, leaving the southern exposure open, and the roof so elevated as to cast off the snow and rain. We have protected cabbage and lettuce plants in this way in this latitude.

Stiff Clays.—If you have any stiff clay beds in your garden, it will be well to dig them up through the winter and give them a dressing of lime or ashes. Such treatment will reduce their tenacity, render them much easier to be worked; besides which, you will have so much of your work done, and your beds ready for early operations in spring.

Anbury, club-root—fingers and toes.—It sometimes occurs that beds on which cabbages, turnips and radishes have been grown for a series of years, become infested with a species of maggot, who prey upon the roots of these vegetables, and cause a disease known by each of these names, which stunts their growth. When such be the case, the beds should be dug up late in the fall, or during early winter, and receive a pretty free dressing of a mix-

ture composed of equal parts of freshly slaked lime, unslaked ashes, and salt. The action of the frost, aided by this mixture, will destroy the vermin, besides greatly improving the productive capacity of the soil.

Fruit Trees.—If the bark on your fruit trees is affected by moss, scrape it off, destroy the moss by burning, and give the body of the tree a dressing of a mixture composed of 1 gallon soft soap, 1 lb. flour of sulphur, and 1 qt. of salt, well stirred together—to be put on with a hard brush. Such dressings destroy the tendency of the trees to become mossy, destroy the germ of insects which may be lodged in the bark, and encourages a healthful growth the ensuing spring.

EXPERIMENTS IN GROWING CORN AND POTATOES IN ALTERNATE ROWS.

I am an amateur farmer, and fond of experiments, but none of the results have been worth publishing. I have been endeavoring for the last 8 years to raise 200 bushels of potatoes and 20 barrels of corn from one acre of ground, by drilling the potatoes in rows 6 feet apart, as early in the spring as the weather will allow, and to drill a row of corn between the potatoes, about the last of April or first of May. The nearest approach I have made to it yet, was in 1848, when the lot of 5 acres yielded 801 bushels of potatoes and 60 barrels of Baden corn. The potatoes were large, and of a fine quality. My success that year with the potatoes was the more remarkable, from the fact that the lot the previous year was in potatoes only, and were almost entirely destroyed by the rot.—The succeeding year, I prepared the ground without manure, and planted the potatoes and corn in alternate rows, with the result mentioned, and the potatoes were entirely free from disease. This year, my experiment will be an almost entire failure, owing to the hot, dry weather, and I shall probably abandon it, though I believe it to be attainable. I am, respectfully, your ob't serv't,

Frederick, Md.

W. TYLER.

EFFECTS OF IRRIGATION.—Mr. Arthur Young, in his "Travels in France," vol. 2, p. 171, has the following:—

"PROVENCE—*Avignon.*—Irrigation is here carried on in great perfection, by means of the waters of the river Durance and the Crillon canal, made only for the purposes of watering. The meadows are mown thrice a year, producing from 30 quintals of hay, at 40s. to 60s. the quintal on each cymena of 21,600 feet (7 ton, 14 cwt. per acre) at three cuts. Such meadows sell near the town for 1000 liv. (£76 10s. per acre); further from it, 800 liv. (£61 5s. per acre). If the season is dry, they are watered every twelve days; but in a moist time, once in three or four weeks. In some cases, they begin with turbid water, and finish with what is clear to clean the crop. Never water their corn at all, but in extraordinary droughts."

Our countless streams offer every advantage of practicing irrigation. In many instances, the expense would be comparatively trifling, then why not call the practice to the aid of our agriculture?—
Editor American Farmer.

We are indebted to our esteemed friend, B. P. Johnson, the enlightened Secretary of the New York State Agricultural Society, for a copy of the Transactions for 1850, for which he will please receive our thanks.

TOP-DRESSING GUANOED LANDS WITH PLASTER.

FARMVILLE, VA., Oct. 26, 1851.

Sam'l. Sands, Esq.,—DEAR SIR:—Being a young farmer, and in need of your advice at this time, I take the liberty to trouble you with a few lines. From the convictions on my mind from reading the American Farmer, I concluded to combine Plaster with Guano before spreading it. But not being able to procure the Plaster in time, I had to spread the Guano by itself. The question is, will it answer a good purpose to spread the plaster *now* on the surface,—the wheat is coming up. Or had I better wait until next spring, say the middle of March or April, and then spread the Plaster at the rate of a bushel per acre; will the Plaster prevent the wheat from ripening as early as it otherwise would;—I dread the rust—a few days makes considerable difference in cutting. You see I am forced into my neighbour's theory against my own wishes. I hope your subscribers to the Farmer are on the increase. The few copies taken in this neighbourhood have been of infinite advantage, and where taken, the face of the country shows a different aspect. In a few years, old men's prejudices are hard to overcome; however, "Book Farming" is on the vantage ground, and men begin to read and think for themselves. A few of our farmers are gone to your Exhibition. I hope it will be the means of increasing their zeal, and that they will return with renewed vigor, and some new agricultural implements. All these things help on the good cause.

You will have leisure in a few days—drop me a line or two, and you will much oblige your obedient servant,
THOMAS HICKSON.

We do not believe that the application of plaster would retard the ripening of our friend's wheat the one-thousandth part of a second. He may either apply the plaster now, or wait till spring, and apply it when he sows his clover seed. If he defers sowing until spring, we would advise him to wait until the frost is entirely out of the ground, then to sow his seed and plaster, and roll his wheat field. The operation of rolling will solidify the soil, increase the tillering of the wheat plants, and ensure a good stand of clover.

IMPORTANCE OF BONES AS MANURE.

PETERSBURG, Oct. 29, 1851.

SAM'L SANDS, Esq.,—DEAR SIR:—It has occurred to me that a great deal of good could be effected if the fact, is (as I hope it is) that Bone-dust, when genuine and properly prepared, is, in the end, a cheaper manure (and as efficient when applied in comparatively increased quantities, according to its permanency,) than Peruvian Guano.

In this important view of the case, it must be borne in mind that fully 66 $\frac{2}{3}$ per cent. of the cost of Guano goes forever out of the United States—while every dollar expended for Ashes, Lime, Bone dust and Plaster, remains among our own people—and the preparation of these articles, if the people could be induced to substitute them for Guano, would give employment to thousands. Guano's great value consists in the fact, that manure for so much land can be transported any distance at so little expense.

I have thought it would be well to call your attention to these matters, and to ask you, if the facts will bear you out, that you put an article in

your paper of December about it, and I would have it republished.

I hope the prospects of your paper are increasing—I feel great interest, for I believe that the only way the South can maintain its position on the slavery question, is from the power and wealth to be obtained from agricultural increased products.

Give the subject of Bone-dust some attention, and let it be more brought into notice—at 75 cents per bushel, well powdered, I consider it cheaper than Peruvian Guano at \$46 per ton of 2000 lbs., which is the price here.

The Government Guano Agents have managed well—I mean in keeping up prices. They sell to the merchants in advance—the merchants sell to the farmers in advance, by getting them to engage so much in advance for fall and spring supply, thereby creating a demand which is truly anticipative, and not real—it is a forced demand. Now, if farmers would put off buying until they need the article, the merchants would put off buying until there was an actual want, which would bring an actual and true demand—the agent would have to try and find a market as the Guano arrived, or store it until the proper season arrived. The agents would not want to hold Guano over from one season to another—farmers want fresh importations, and would be unwilling to buy one year's import during the next—in this way, his fears and anxiety about his stock depreciating or being "blown upon," would be worked upon, and bring prices down \$5 a 7 per ton. I think \$40 per 2240 lbs. would pay very well.

What has become of the Bone-earth found in N. Jersey.
Yours very truly,

F. C. STAINBACK.

COMPOSITION OF BONES.

"Bones differ slightly in composition in different animals, they vary also with the age of the animal and with the part of the body from which they are taken. The following composition of the bones of the cow will represent very nearly that of the bones which are usually applied to the land:

Organic matter (gelatine,)	33 $\frac{1}{2}$
Phosphate of lime,	55 $\frac{1}{2}$
Phosphate of Magnesia,	3
Carbonate of lime,	3 $\frac{1}{2}$
Soda and common salt,	3 $\frac{1}{2}$
Chloride of Calcium,	1

100

When bones are burned in the open fire, the animal matter they contain—the gelatine—disappears, and the white bone-earth alone remains. These two portions of the bone, the combustible or organic, and the incombustible or inorganic part, are equally essential to the fertilizing action, which the bones produce. As some inexperienced writers have disputed this in regard to the organic part, it will be proper briefly to advert to its composition and mode of action.

Composition and mode of action of the organic part of bones.

The gelatine of bones consist of,	
Carbon	50.37
Hydrogen	6.33
Nitrogen	17.95
Oxygen	25.35

100.

It is identical in composition with horn and with isinglass; and is very nearly the same as hair, wool, and skin. It is important to recollect that it contains about 18 per cent., or one-sixth of its weight, of nitrogen.

That this organic part is likely to act beneficially as manure, is rendered probable by the fact, that horn shavings are highly valued as an application to the land, and that the parings of hides and woolen rags bring a high price in the market as manures for certain crops.

But that it does act beneficially, is proved by the success which attends its use, when separated from the earthy part of the bones. In Manchester, bones are boiled for the extraction of a size (glue,) which is used in the stiffening of calicoes. When the stiffening liquor is so exhausted as to be unfit for further use, it has been applied as a liquid manure to grass-lands, with the greatest success. There can be no reasonable question then upon the organic part of bones, their beneficial action as a manure in some degree depends. It is only surprising that chemists of name should have been found to deny it, and that practical men should have so far distrusted their own experience as to have believed and acted upon such an opinion.

But how does this organic matter act? It no doubt feeds the plant, but it may do this in one or other of two ways. It may either be completely decomposed in the soil, and enter the roots of plants,—as Liebig supposes all organic nourishment to enter—in the form of carbonic acid and ammonia; or it may be rendered soluble in the soil, and may thus be taken up by the roots, without undergoing any ultimate and thorough decomposition.

Now, supposing it to be resolved into carbonic acid and ammonia, the quantity of gelatine contained in 100 lbs. of dry bones is sufficient to produce upwards of 6½ lbs. of ammonia, as much as is present in 20 lbs. of Sal ammoniac, or in 30 lbs. of crystallized sulphate of ammonia. Supposing the animal matter of the bones to be thus decomposed in the soil before it can be useful to the plant, few I think will question, that the quantity of ammonia it is likely to produce would materially aid the growth of the crops to which the bones were applied.

But I do not think this final decomposition necessary. The large quantity of nitrogen which the gelatine contains, may, I believe, be taken up by the plants without being previously brought into the state of ammonia. The gelatine, being rendered soluble in the soil, may enter the roots, and may at once minister to the growth of the plant, just as the gluten of the seed, being rendered soluble when the grain germinates, ascends with the sap, and feeds the young plant. It would be out of place here to discuss this point, or to give the reasons which induce me to entertain this opinion. It is sufficient for the practical man to know, that whichever of these views a man may hold, he must still grant that the gelatine of the bone is valuable to the farmer. Whether its nitrogen enter into the root in the form of ammonia, or in some compound state, it must be useful to the plant: and, therefore, he who advises the farmer to burn his bones, or would persuade him that the earthy part alone, or any thing equivalent to this earthy part, would alone be as useful to his land as the entire bone, advises him to his hurt, and would persuade him to that which would eventually be a source of loss.*—Extract from Prof. Johnston's Essay on the use of Bones.

It is obvious from the whole tenor of the reasoning of the above, that the organic—the animal part of bones—is of vast importance—that fresh bones are infinitely more serviceable than those that may have been either burnt or boiled. The burning, destroying all the animal matter, is more injurious than the boiling process, as a portion of the organic part is still left after the latter. To farmers, then, we say, save all the bones from meats, and fish, consumed on your farms, as every 4 bushels, so saved, will be equal, in their fertilizing virtues, to 200 lbs. of guano, if dissolved in sulphuric acid.—Editor of the American Farmer.

We had prepared the above some months previous to the receipt of the interesting communication of our esteemed friend which precedes it, but owing to press of matter, have not been able to get it in. His letter has acted to recall it to our mind, and we give it a place this month. Upon the value of bones as a manure, we have written much, and published much from the pens of others, and shall continue to do so, as we look upon bone-earth, made from fresh bones, that is, bones that have neither been boiled nor burned, as among the richest and most durable of all animal manures. According to the calculation of Payen and Boussingault, 64 lbs. of Bones contains as much nitrogen as 1000 lbs. of farm-yard manure. This fact goes at once to place a value upon bones which cannot well be over estimated, for there is no substance which forms a more important element than does nitrogen in the economy of vegetable and animal life and growth.—Ed. Am. Farmer.

PROFIT ON AN ACRE OF CARROTS.

Francis Dodge, Esquire, of Essex County, Mass. raised 34½ tons of Carrots on an acre, which, at 56 lbs. to the bushel, make 1380 bushels. The rows were 22 inches apart. One pound of orange carrot seed was sown by a machine. The carrots were hoed three times and weeded twice; the last hoeing just before the tops covered the ground. They were dug with a spade; the tops carefully saved and fed to the cows, the tops being at the time knee high. We abstract the above, and give the following statement of the expense of culture, and net profit, from the Transactions of the Essex County Agricultural Society.—Ed. Am. Farmer.

The expense of cultivation was as follows:—

Interest on land at 6 per cent.,	\$7 20
Ten cords of manure, at \$6 per cord,*	60 00
Spreading the same	3 00
Ploughing	2 50
Harrowing	2 00
Ploughing and raking	4 00
Seed	1 00
Sowing \$1, Hoeing and weeding \$15	16 00
Digging	21 00
Total expense	\$116 70
Value of crop, 34½ tons at \$7 per ton	\$241 50
Value of tops	7 00
One half manure to land	30 00
	278 50
Deduct expense	116 70
Net profit	\$161 80

* A cord of manure contains 103 bushels.

ENGINES FOR AGRICULTURAL PURPOSES.

Report of the Committee on Steam Engines, made to the Maryland State Agricultural Society, at its Annual Exhibition in 1851:

The Committee on Agricultural Steam Engines respectfully report, that as a preliminary to the discharge of their duties in awarding a premium, they thought it advisable to settle some principles for their guidance.

The distinguishing feature of an agricultural Engine is its movability; not by its own power, like a locomotive, but as a common wagon, drawn by the horses or oxen of the farm. The ease with which it can be transported from place to place, as the work, to be done by it, may require, becomes then an important consideration. This is, of course, dependent in a great degree, upon its weight, which, in its turn, depends, again, upon the effective power, which the Engine is required to exert, and upon the compactness and handiness of the machine.

The committee are of opinion, that, although, under some circumstances, a larger Engine, or one of more power, might be required, yet, that, ordinarily, an Engine of eight horse power will answer all the purposes of the farms for which it would be likely to be procured—the heaviest work to which it would be put being the threshing and cleaning of the grain, to which it would be amply competent.

Another consideration, connected with the Engine, is, that it should be ready, at all times, for service, and that, with the exception of supplying it with water, and providing fuel for it, no more would be necessary to be done for it, than to the cart in the shed alongside, to fit it for use. In fact, the engine should be looked upon as familiarly by the hands on the farm, as the ploughs and harrows or cutting box—and the working of it should be as well understood as the working of these familiar implements.

The problem to be solved then, in this connection, is the construction of an eight horse power steam engine, at all times ready for use, when in repair, and not so cumbersome as to be of inconvenient transportation by the ordinary draught animals on the farm.

It at once suggests itself, that the boiler should be the foundation for the rest of the machinery, and it is accordingly so represented in all the drawings of engines that the committee have seen, as well as in the engines which have come under their notice, except in the small one of Captain William Virdin, which is exhibited on this occasion, and which has, indeed, suggested the present remarks, as being proper at this time. The advantages of making the boiler the foundation of the machinery are so apparent, in view of compactness of construction and stability, that the committee need not enumerate them.

All the considerations thus far suggested point of course to the high pressure steam engine, and the parts of this are so few, that there is but little room for originality in the construction of the portable machine in question, except in the mere form and arrangement of it. Still there is, in form and arrangement, much that may be done towards improving the best machines of which the committee have any information.

The committee appreciate so highly the value of the steam engine for agricultural purposes, and are so well satisfied that it must, ultimately, take its

place in a farmer's barn yard, as regularly as his horses take their places in their stalls, that they have gone further into suggestive remarks than they would otherwise have done; and they state now, their conclusions, in the hope that they may afford something like a guide to those manufacturers who may be disposed to enter into competition for the Society's premium for an agricultural engine hereafter.

1. The first and most important requisite of a good agricultural steam engine is *simplicity of construction*, which involves the smallest number of parts, joints, pipes, bolts, &c. The engine, unlike the common stationary engine, is put into the hands of persons, who have to learn to manage it without any previous education—and simplicity is a necessity of their ignorance.

2. Being a moveable machine, and liable to greater injury than a stationary one, on this account, all its parts should be strong enough to stand the rough usage they have to expect; while at the same time, the machine is not made so cumbersome, as to render its transportation difficult, or beyond the ordinary means of the farm.

3. It should be constructed so as to afford the easiest access for repairs to every part of it. The pumps, for instance, should be so constructed, that their valves may be opened and examined readily, in case they choke. The steam chest should be so arranged as to permit the easiest setting of the valves, or openings, in connection with the eccentrics. There should also be a contrivance by which the quantity of water in the boiler should be visible; or at all events, by which its getting too low should be made known to the persons in charge. None better could be suggested, probably, than a contrivance by which the fire should be put out when the water got too low, which is understood to be resorted to in engines on plantations at the south. Without some such contrivance, it may be expected that an agricultural steam engine will either explode at an early period of its existence, or have its furnace burnt out.

4. All these requisites should be combined in an engine, the cost of which should not much exceed one hundred dollars an horse power.

With these remarks, the committee now proceed to the examination of the engines on the ground.

1. A twenty horse power Engine made by William M'Kinstry, of the District of Columbia.

2. An eight horse power Engine made by Murray & Hazlehurst, of the Vulcan Works of this city.

3. A small Engine said to be of an $\frac{1}{2}$ horse power, rather to be looked upon as a model, invented by Captain William Virdin, and made by

of
The first of these engines is similar in principle and form to one that was offered for, and obtained, a premium at the last annual Exhibition, made by the same ingenious and excellent machinist. The present engine is intended for Alabama, and its size is according to the order given for it. The committee recognize great merit in it, and see little if any thing that could be changed for the better in view of the use to which it is mainly to be appropriated. There is an excellent neatness about it which at once strikes the eye, and an admirable proportion of parts. But it is far too large for the purposes required of such a machine under the circumstances in view of the committee; as is, of course, admitted by the constructor, who offers it

as a specimen of his skill, and who, it is hoped, will at the next exhibition produce one of the same family but of smaller growth. The committee take pleasure in thus commending Mr. M'Kinstry's work, though they do not award to it the premium, which they think should be given to a machine only that could be transferred, at once, from the grounds of the Society to a Maryland farm, for its ordinary purposes.

The next engine is that of Murray & Hazlehurst, built to the order of Col. Carroll of Doughoragan Manor. It is an eight horse power engine, with an horizontal boiler, to which the principal parts of the machine are attached. It is very compact and simple—all its parts, (as well by the way as those of the first named engine) are easily accessible, and there are several features about it which strongly recommend it as a valuable and available machine. As a first attempt it is most creditable; and the smooth and easy manner in which it ran, showed a careful construction that was very gratifying. It complied fully with the requisition already referred to, of being complete in itself, and ready for use without any other preliminary than steadying on the ground, and filling the boiler with water. In this respect it was different from Mr. M'Kinstry's engine, the ash box of which is separate, as well as the fly wheel, which have to be attached, after the machine is placed in position, a feature not objectionable, and indeed unavoidable when the engine is so heavy. The engine of Murray & Hazlehurst fulfils so nearly all the requisites heretofore suggested, that the committee award to it the Society's premium.

The third engine is that of Captain Virdin. The construction of this is original and ingenious, and does credit to the talent of the inventor, who has offered it rather as a model, than as a machine available for ordinary purposes.

The committee however, are of opinion, that invention has resulted here in complication without corresponding efficiency. That the use of two pistons, in the same cylinder, does not afford so useful an exhibition of power, as one piston of the area of the two together working in a single cylinder of half the length. The three connecting rods of Captain Virdin's machine, working as they have to do in the same plane and at the same angle, are inferior to one connecting rod in simplicity, economy and effect. Three rods have to pass the dead point at the same time instead of one—and the inevitable inaccuracy of the adjustments of these rods must render the smooth working of the machine, even with a heavy fly wheel, doubtful, as the committee think is apparent in the present model when in motion. The cylinder with the two pistons is in fact two cylinders. The committee think it would be far preferable to have two cylinders, separated from each other, if two are necessary under any circumstances, like those of a locomotive engine, the cranks of which could be worked at right angles to each other—and in the use of which Captain Virdin would save the employment of one of his connecting rods, with a better result than he now obtains. The cylinder of this engine is not attached to the boiler, which, as already intimated, the committee consider a defect.

In making their report the committee have thought it their duty to express their opinion frankly about the machines exhibited, in the hope that perhaps their remarks might be of service in competitions hereafter—nor have they thought that they

could with propriety stop with the assertion that a machine offered was defective, without giving their reasons. These reasons are in justice, the right of the exhibitor; for the committee which criticises, may be shown by him to be wrong. Hence the present remarks on Captain Virdin's engine.

In the report of this committee made last year, the advantages of engines for agricultural purposes were so fully exhibited, that nothing need be added on that head now. Steam is already potent, in a portable form, in all the occupations requiring great power. It drives piles, it loads and unloads vessels, it excavates railroads and canals—it is the handmaid of the architect and builder—it has saved the back of the hod-man—and taken the place of the pick and the shovel. The committee see no reason why it should not thresh and clean grain, grind corn, cut straw and corn stalks, pump water for irrigation, churn butter—perhaps, not milk the cows, though there is a machine for doing that, even—but perform usefully and efficiently nearly all the labors of the farm yard.

All of which is respectfully submitted. On behalf of the committee,

JNO. H. B. LATROBE, Ch'n.

TO PROTECT TREES FROM MICE, RABBITS, &c.—Meadow mice, or moles often destroy trees by girdling. As they work under the snow, treading down early snows around trees is a preventive. Heaping up a cone of earth around a tree, in the fall, is generally sure. On grass land, a cart-load of loam will suffice for several trees, and if spread around them in spring, will improve the soil.

Trees may be saved by tying around them laths, shingles, old barrel staves, boards, old leather, canvass, cloth, birch, &c. In England, soot and milk applied as paint, protects trees from hares and rabbits, and it may be good against mice. With tobacco, sulphur, assafetida, hen or pigeon manure, or other offensive substances, and mud or clay to give body and tenacity, a mixture may be made that will doubtless prevent all depredations of the kind; and if the rains do not wash it off in the spring, remove it with soapsuds. Industrious cats are useful.

Culture of the Rose.—Mr. Editor.—Five years experience in growing of Roses, warrants my sending you this communication, only requesting it may be tried before being condemned.

The Rose is a gross feeder; therefore, any time from October to February, apply from half a peck to a peck of the best stable manure to each root; not one week on the place before application; set the roots 5 or 6 feet apart each way, and trim by no means as closely as the florist directs. Very many of my rose trees meet, and I believe the roses are now as fine, if not more so than any in and about our city. This spring, I applied manure to two roots in April, with equally good results.

Charleston, S. C., Oct. 1851.

"S."

The Grape Blight in Italy.—Great alarm was felt in Italy in consequence of the apprehension of a failure of the vintage, caused by the blight, which was spreading through all parts of the peninsula. A calamity of this kind, in Italy, is justly compared to the failure of the potato crop in Ireland.—The governments of the several countries of Italy, are investigating the matter. At the *Accademia dei Georgofili*, at Florence, on the 3d of August, Professor Pietro Savi gave it as his opinion, that the plant which infests the vines is the same spongy substance which from time immemorial has attacked the rose and other similar flowers and plants.

ESSAYS

ON

Various Subjects of Practical Farming.

BY EDMUND RUFFIN, OF VA.

THE EXCAVATION OF MARL PITS, AND CARRYING OUT AND APPLYING OF MARL.*

The natural features of marl beds, and their exposures are different at almost every locality; and therefore no one manner of working will suit precisely for different diggings. Still, all the marl beds of Virginia may be classed under three heads, in reference to the excavation and removal of the marl.

I. The first class is of marl exposed (or "cropping out") high up on hill-sides, with but little over-lying earth to remove for large excavations of the marl below—the marl and the adjacent ground dry and free from springs—and the proper sites for roads, leading to the fields, either descending, or nearly level, or with not much ascent. Marl so lying is often of the richest kind, containing from 60 to more than 80 per cent. of pure shelly matter, and that mostly finely divided. Many of these richest and also most easily worked bodies of marl are in the middle range across the rivers and the marl region of Virginia—for example, in the counties of Nansemond, Isle of Wight, Surry, James City, York, New Kent, and the lower part of King William. Under these very favorable circumstances, special directions for working such marls would be superfluous. The labors required are as simple, and almost as cheap, as the digging and carting away of earth from a hill-side to construct a mill-dam.

II. The second class of exposures and diggings is usually of much poorer marl, and attended with much more difficulty and cost than the preceding. In high lands, cut through by deep ravines, or narrow valleys, the natural "out-croppings" of the marl are usually low down the sides, or at the bottoms of steep hill-sides, the marl often wet from springs oozing over the top, and also from water percolating slowly through the mass of marl. The lower adjacent ground is also wet, by springs or streams. The overlying earth is very thick, and costly to remove; and a steep or a long-ascending road is required to draw the marl to the higher lands where it is to be applied.

In hilly lands, the bed of marl usually "crops out" on the swells, or convex curves of the hill-sides, and thus is naturally exposed to view. If this is at a considerable elevation above the bottom of the ravine or narrow valley which is usually at the foot of the hill, the marl will generally be dry. But its being dry will depend on some one of the following conditions: 1st. When the overlying beds of earth have not enough extent of surface to allow springs to be formed by infiltration of rain-water; or there is no impervious bed, either of the marl or its overlay, on which spring water can be borne, and it flows from distant sources: 2nd. Or even if there be any such impervious and water-bearing stratum, that its "dip" is in a direction leading from the "out-cropping" of the marl; so that all spring water, or infiltrated rain-water, must

necessarily flow in a direction leading from the exposure. In the reversed circumstances, the marl will be wet, and proper drainage of the pits will be necessary. Bodies of marl of this second class are most common in the high and broken lands lying between the localities named above, and the falls of the rivers.

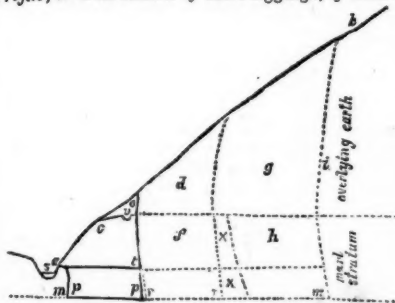
III. The third class of marl generally belongs to the more level lands—but in some cases to the low bottoms and ravines of the highest and most hilly. But in either case, the surface of the marl is lower than that of all the surrounding land, (unless perhaps of the mere out-let for the water—) and the excavations and the roads all need careful and perfect drainage.

I will now return to the consideration, principally, of excavations of the second class; though they will in part suit also for the third class.

There is a general dip of the marl to the east, through lower Virginia. But this is so slight, and irregular withal, that it does not always direct the course of the spring-water above according to the general course of the dip. At each particular locality, the marl stratum may be considered as nearly horizontal. The upper surface of the dry marls are often very irregular in outline, owing to the washing operation of ancient currents of the sea, or later floods, subsequent to the deposition of the beds of shells.

Unless very sandy and poor, and also oozy, all our marls are sufficiently firm before being dug, for the sides of a pit to stand secure when cut perpendicularly. The dry beds, of course, are much easier to be worked than the wet. Where the bed is dry, no directions are required for pit-work; except that the pit shall be long enough to allow the carts to descend therein, and to rise out, loaded, on a graduated and gently sloping road-way. This will obviate the necessity existing when pits are short and steep, of twice throwing the marl—first out of the pit, and afterwards into the carts. No machine or contrivance yet known will serve as well for cheapness to raise marl from the bottom of a pit, or digging, as a cart; and no care or labor will be lost in draining and enlarging the pit, and graduating the ascent out from it, if thereby carts can easily and safely draw from the bottom. These remarks may apply to any excavation made by sinking pits below the level of the general surface.

Profile, or cross-section of marl diggings, of class II.



Explanations.

- b, a. Face of hill-side.
- s, Stream, or bottom of valley.
- p, c, f, h, m, Bed of marl, out-cropping at c.
- m, m, Bottom of workable marl.
- a, d, g. Overlying earth.

I will describe an ordinary case of hill-side excavation.

* This article is an extract from a new and much enlarged edition of the "Essay on Calcareous Manures," which is still in manuscript, and unfinished.

Suppose the marl to "crop out," or otherwise to come near to the surface near the foot of a high hill side, (as at *c*,) a ravine and stream being at the bottom, (*s*) and table land at the top of the hill-side, over which the marl is to be carted to the fields, after rising the hill-side by a graduated road. These are common natural features of marl localities, in hilly lands, (and of class II.) The out-crop, or natural exposure of the marl (*c*) is on a convex curve of the hill-side. The first operation is to clear off the little overlay of earth, from above the out-crop, (*o*,) so as to uncover a sufficient space for digging and carting, (*o*, *c*.) This space should be (if practicable,) 15 feet across, of horizontal width, to permit single-carts to turn upon; and as long (with the course of the stream,) as the ground may permit, say 30 feet or more. This small amount of overlying earth (*o*) is easily disposed of, by being thrown into the ravine, or across the stream. The uncovering reaches to the top of the marl stratum, which is supposed 12 feet thick; of which, 8 feet are above and 4 below the level of the stream. A road is next laid off, graduated to best advantage, and constructed, descending from the upper table land to the uncovered marl, the lower end of the road being on a level about 1 foot higher than the stream, and of course 5 feet above the bottom (*m*, *m*), of the marl fit for use. (The lowest part is usually too poor, and sometimes too much affected by water, to be worth being removed.) If springs ooze out over the top of the marl, a little trench (*v*) of about 4 inches wide and as many deep, must be made along the back line of the uncovering, to cut off and convey away the spring water. The uncovered and drained marl (*e*, *t*), is then dug and carted out; the work being so conducted as to level the surface, and enable the carts as soon as the surface is enough lowered, to pass over, turn about, and be loaded upon the marl. When the whole space has been dug down to the level of the lower end of the road, (*a*, *t*), then a perpendicular pit should be dug at the end of the area farthest from the descending road, and across its whole width. This pit (*p*) will be 15 feet long, about 6 to 9 wide, as may be most convenient, and 5 deep when finished to the bottom. The carts turn on the area (*a*, *t*), and are loaded at the edge of this pit. When finished, another similar pit is dug alongside; and others in succession, until the whole area of the first uncovered marl has been so pitted out. The overlay (*d*) is then dug and thrown off from the next range or section of marl, (*f*), so as to uncover another width of 15 feet. The removed earth here (*d*), where highest, might have been more than 10 feet thick. But the space excavated for the first range of marl (*e*) has more than room enough to receive all this earth.

The carts now have to be supplied from the second range of marl (*f*). As this is throughout of the full thickness of the bed, and rising 7 feet above the lower end of the road, it may be convenient to make a branch to the road running on a level to the top of the marl. This branch will be used until the lowering of the upper marl, by its excavation, shall render the lower branch of the road again more suitable. This range of the marl is drained, worked out to the level of *a*, *t*, and then the lower part (*r*, *r*), excavated in successive perpendicular pits, in the same manner as the previous range. Then a third range of overlay (*g*) is dug and thrown off into the finished previous excavation (*f*, *r*, *r*); and by its increased thickness per-

haps fills it up as high as the top of the marl stratum. But this does no serious harm. It will however require the leaving a wall of marl (*x*, *x*) when digging out the marl below (*h*) to keep out the earth and water of this heap; and also cross-walls for support, between the lower perpendicular pits.

It will now be much more laborious to uncover another range, (at *i*) still deeper in the hill-side; and it will become a question for the operator to decide, whether to proceed further with this work here, or to begin another uncovering in some more favorable situation.

For any extensive operation, it is much cheaper to take off a cover of earth 20 feet thick, to obtain marl of equal depth, than if both the covering earth and marl were only three feet each. Whether the cover be thick or thin, two parts of the operation are equally troublesome, viz. to take off the mat of roots, and perhaps some large trees on the surface soil, and to clean off the surface of the marl, which is sometimes very irregular. The greater part of the thickest cover would be much easier to work. But the most important advantage in taking off earth of ten or more feet in thickness, is saving digging by causing the earth to come down by its own weight. If time can be allowed to aid this operation, the driest earth will mostly fall, by being repeatedly undermined a little. But this is greatly facilitated by the oozing water, which generally fills the earth lying immediately on beds of wet marl. In uncovering a bed of this description, for one of my early operations, where the marl was to be dug fourteen feet, and ten to twelve feet of earth to remove, my labor was made ten-fold heavier by digging altogether. The surface bore living trees, and was full of roots—there was enough stone to keep the edges of the hoes battered—and small springs and oozing water came out everywhere, after digging a few feet deep. A considerable part of the earth was a tough, adhesive clay, wet throughout, and which it was equally difficult to get on the shovels, and to get rid of.—Some years after, another pit was uncovered on the same bed, and under like circumstances, except that the time was the last of summer, and there was less water oozing through the earth. This digging was begun at the lowest part of the earth, which was a layer of sand, kept quite wet and soft by the water oozing through it. With gravel shovels, this was easily cut under from one to two feet along the whole length of the old pit, and, as fast as was desirable, the upper earth, thus undermined, fell into the old pit; and afterwards, when that did not take place of itself, the fallen earth was easily thrown there by shovels. As the earth fell separated into small but compact masses, it was not much affected by the water, even when it remained through the night before being shoveled away. No digging was required, except this continued shoveling out of the lowest sand stratum; and whether clay, or stones, or roots, were mixed with the falling earth, they were easy to throw off. The numerous roots, which were so troublesome in the former operation, were now an advantage; as they supported the earth sufficiently to let it fall only gradually and safely; and before the roots fell, they were almost clear of earth. The whole body of earth, notwithstanding all its difficulties, was moved off as easily as the driest and softest could have been by digging altogether. The thicker the

overlying earth, the greater is the facility of undermining, and causing it to fall by its own weight.

In working a pit of low-lying and wet marl, covered and surrounded by higher ground, (class iii,) no pains should be spared to drain it as effectually as possible. Very few beds of marl are penetrated by veins of running water which would deserve the name of springs; but water generally oozes very slowly through every part of wet marl, and many small springs often burst out immediately over its surface. After the form of the pit and situation of the road are determined, a ditch to receive and draw off all the water should be commenced lower down the valley, as deep as the bottom of the area where the carts are to stand is expected to be made; and the ditch opened up to the work, deepening as it extends, so as to keep the bottom of the ditch on as low a level as the bottom of the area. It may be cheaper, and will serve as well, to deepen this ditch as the deepening of the pit proceeds. After the surface of the marl is uncovered for the full size intended for the area, (which ought to be at least large enough for carts to turn about on,) a little drain of three or four inches wide, and as many deep, (or the size made by the grubbing hoe used to cut it,) should be carried all around to intercept the surface or spring water, and conduct it to the main drain. The marl will now be dry enough for the carts to be brought on and loaded. But as the digging proceeds, oozing water will collect slowly; and, aided by the wheels of loaded carts, the surface of the firmest marl would soon be rendered a puddle, and next a quagmire. This may easily be prevented by the inclination of the surface. The first course dug off should be much the deepest next the surface drain, (leaving a margin of a few inches of firm marl, as a bank to keep in the stream,) so that the digging shall be the lowest around the outside, and gradually rise in level to the middle of the area; or next to the old diggings, now heaped with the later removed overlay. Whatever water may find its way within the work, whether from oozing, rain, or accidental burstings of the little surface drain, will run to the outside, the dip of which should lead to the lower main drain. After this form has once been given to the surface of the area, very little attention is required to preserve it; for if the successive courses are dug of equal depth from side to side, the previous shape will not be altered. The sides or walls of the pit should be cut, (in descending,) something without the perpendicular; so that the pit is made 12 or 15 inches wider at bottom than top. The usual firm texture will prevent any danger from this overhanging shape, and several advantages will be gained from it. It gives more space for work—prevents the wheels running on the lowest and wettest parts—allows more earth to be disposed of, in opening for the next pit—and prevents that earth from tumbling as easily into the next digging, when the separating wall of marl is afterwards cut away. The upper and larger drain of the pit, which takes the surface water, will hang over the small one below, kept for the oozing water. The former remains unaltered throughout the job, and may still convey the stream when six feet above the heads of the laborers in the pit. The lower drain of course sinks with the digging. Should the pit be dug deeper than the level of the main receiving ditch can be sunk, a wall should be left between, and the remainder of the oozing water must be conducted to a little basin

near the wall, and thence be baled or pumped into the receiving ditch. The passage for the carts to ascend from the pit should be kept on a suitable slope; and the marl forming that slope may be cut out in small pits, after all the other digging has been completed.

If the marl is so situated that carts cannot be driven as low as the bottom, either because of the danger of flooding, or that the ascent would be too steep for sufficiently easy draught, then the area must be cut out in small pits, as before stated, beginning at the back part, and extending as they proceed; towards the road leading out of the pit.

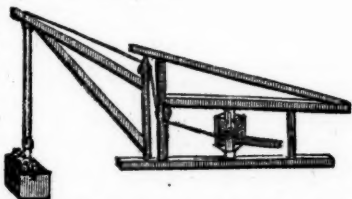
It is the less required to extend directions for the mode of working low-lying marl, covered and surrounded by higher land, and by its springs, because large excavations under these difficulties, will be described in a later part of this work, and the whole course of procedure minutely stated.

In some cases, either because of the great liability of the overlying oozy earth to cave and fall in, and thus continually to choke the surrounding marl drains—or of rain-floods to fill and damage the excavations—it is too hazardous to leave diggings unfinished for any length of time; and still more for the unfinished work to be suspended through winter. In such cases, it is better to bestow more labor to obtain security. Under such circumstances perpendicular pits should be sunk through first the over-layer and then the marl. If not too great a height, the marl, as dug, should be thrown to the top of the remaining firm earth, there to be thrown into and removed by the carts. When the digging is carried so low that the throwing exceeds 10 feet in perpendicular height, a scaffold should be made, of two or three planks, against the side of the pit next to which the carts approach, and at a convenient height for the remainder of the digging. The lower marl will be thrown first upon the scaffold—thence to the surface of the ground above—and then into the carts. Thus, the marl may be thrown up from the bottom of the bed, if that be not more than 20 feet below the surface for loading. The length and breadth of such pits should not be greater than to permit each pit to be finished in a few days after its commencement. Then an adjoining like space may be uncovered, the earth being thrown into the previous digging, and the marl excavated in like manner. Should a flood of rain water, or the caving in of wet earth fill such a pit, when the digging had not been sunk but a few feet, the damage may be remedied and the remaining marl saved. Or if but a few feet thickness of marl be left, and is covered by earth or water in too great quantity to be worth clearing out, then the loss of the bottom marl will not be very important.

For such situations as these, in some cases lifting machines have been used successfully. One used by Wm. Carmichael, Esq. of Maryland, was described by him in a communication to the Farmers' Register, as follows:

"In your 'Essay on Calcareous Manures,' you give instructions for digging and carting marl.—This method I pursued for several years, but found the labor hard on my hands, and tedious. Marl here is generally found in deep ravines or in wet grounds. My operations have been slow, from the difficulty of making firm and lasting ways, and the labor of ascending steep hills. Last winter I made a model, and this spring I built a machine for raising marl, to be worked by a horse. I have been

using it to advantage, and now send you a draught of it, as it may be useful to those who have wet marl pits like mine. By means of a pump to throw off the water, pits may be worked at a considerable depth; and even if marl is dry, but lies deep, I think the crane might be used to advantage. I use two boxes, and by means of hinges and a latch the marl is discharged from the bottom. I have double blocks; the rope passes through the swoop about eighteen inches from the end, and runs down to the post which supports the swoop, and passes through it on a small roller, and in like manner through the next post to the cylinder, to which a reel is attached to increase the motion. The post which holds the swoop and the cylinder, runs on iron pins let into timbers. The lever is in two pieces, one fastened in the cylinder with a groove at the end, into which the other is let, and secured by a sliding iron clamp. When the marl is discharged from the box, and the swoop swung round over the pit, in nautical phrase, by unshipping the end of the lever, the rope unwinds, and the box descends without moving the horse. The circle in which the horse travels ought to be twenty-one feet in diameter. The second and third posts are supported by side braces.



"The cost of the machine is small, though I cannot make an exact estimate. The carpenter who did the work was hired by the day on the farm, and was taken off with other jobs; but his bill could not exceed eight dollars. The cost of the iron-work was ten, and one hundred and sixty-five feet of inch rope, at eighteen and a half cents a pound. The timber, taken from my own woods, may be estimated at five dollars. The rope I find soon wears out, and I intend to supply its place with a light iron chain.

"When the marl is uncovered, with one efficient hand in the pit and a less efficient one to discharge the boxes and drive the horse, five hundred bushels may be raised in a day. The work is not oppressive to the laborers. The teams stand on high, dry ground; no sloughs to plunge through, and no hill to climb. The swoop is turned by a small rope over the carts, and the marl immediately discharged into them. I work four carts, with two sets of oxen to each. They came out of the winter lean and weak; and now, with green clover for their food, at the distance of a half to three-quarters of a mile I draw out from four to five hundred bushels a day, and my oxen have improved. My work goes on with ease and expedition, without stoppage to mend roads, or to clean ditches."

Machines of this kind will be required, and will be most profitable, whenever marl is to be taken from deep and wet pits, and in extended operations.

[To be concluded.]

✍ A communication from a correspondent at Denton, (Md.) is received.

FLORAL DEPARTMENT.

Prepared by John Feast, Florist, 279 Lexington st. for the American Farmer.

The operations in the out-door department will be near their close for the season, but if the weather should prove favorable, planting may be continued as long as the ground keeps open; the making of borders, planting box and bulbous roots, may also yet be attended to—cover them over with rotted leaves to protect the roots, about three inches thick. Pruning of Trees, Vines and any kind of ornamental trees and Roses, may be also attended to, so that you may have them in readiness for the opening spring; protect every tender plant that requires it with matting, straw or other covering, and cold frames, &c.

Plants in the house, require attention in keeping clean, as they are apt to throw off their foliage some little when first put in the house; have them carefully watered, and not kept too wet, at this season; give the plants sufficient water when they need it, and don't be giving a little at a time, whereby the roots receive no moisture—this is too often done, whereby many plants lose their buds, especially Camellias; give them plenty of air when the weather is fine, and syringe occasionally; also fumigate, to kill the insects, and keep moderate fires, but do not force to a high temperature, without it is intended to supply an early bloom of flowers in the beginning of the winter.

A BEAUTIFUL PICTURE.—The man who stands upon his own soil, who feels that by the laws of the land in which he lives—by the laws of civilized nations—he is the rightful and exclusive owner of the land which he tills, is by the constitution of our nature under a wholesome influence not easily imbibed from any other source. He feels—other things being equal—more strongly than another, the character of a man is the lord of an inanimate world. Of this great and wonderful sphere, which, fashioned by the hand of God, and upheld by his power, is rolling through the heavens, a part is his—his from the centre to the sky. It is the space on which the generation before him moved in its round of duties, and he feels himself connected by a visible link with those who follow him, and to whom he is to transmit a home. Perhaps his farm has come down to him from his fathers. They have gone to their last home; but he can trace their footsteps over the scenes of his daily labors. The roof which shelters him was reared by those to whom he owes his being. Some interesting domestic tradition is connected with every inclosure. The favorite fruit tree was planted by his father's hand. He sported in boyhood beside the brook which still winds through the meadow.—Through the field lies the path to the village school of earlier days. He still hears from his window the voice of the Sabbath bell, which called his fathers to the house of God; and near at hand is the spot where his parents laid down to rest, and where, when his time has come, he shall be laid by his children. These are the feelings of the owners of the soil. Words cannot paint them—gold cannot buy them; they flow out of the deepest fountains of the heart, they are life-springs of a fresh, healthy and generous national character.—*Ed. Everett.*

✍ The list of entries at the late Cattle Show of the State Society of Md. intended for this month, is necessarily deferred until our next.



BALTIMORE, DEC. 1, 1851.

TERMS OF THE AMERICAN FARMER.

\$1 per annum, in advance; 6 copies for \$5; 12 copies for \$10; 30 copies for \$20.

ADVERTISEMENTS.—For 1 square of 12 lines, for each insertion, \$1; 1 square, per ann., \$10; $\frac{1}{2}$ column, do. \$30; 1 column, do. \$50—larger advertisements in proportion.

Address, SAMUEL SANDS, Publisher, At the State Agricultural Society Rooms, No. 128 Baltimore st. over the "American Office," 5th door from North-st.

TO CORRESPONDENTS.—Among the communications on hand, we have one from the Hon. Wm. Carmichael—As some matters of importance are contained in it, calling for the action of the legislature of our State, it is perhaps as well that it was received after our pages were already pre-occupied, as they can be presented to the members of the General Assembly whilst in actual session, in our next No.

The papers from Mr. Ruffin, and other correspondents, in the present No., will, we are confident, be read with much interest.

We have been favored by a friend in South Carolina, with a paper on the cultivation of Rice in that State, which we intend transferring to our columns.—Our thanks are due, and are hereby tendered for the response made to our request.

The communications from "T. E. Blount," Esq., "P. H.," and others, were received too late for insertion in this month's journal, but shall be cheerfully attended to in our next. The experiments of Mr. B. are peculiarly interesting, and the more so, as they were made with intelligence and accuracy.

Charles County Agricultural Society.—The Annual Exhibition of this Society was held at Port Tobacco on the 12th and 13th ult., and appears to have passed off with great spirit. Messrs. Sinclair & Co. and Chas H. Drury, of this city, two of our excellent implement makers, were on the ground with a good display, and divided the premiums of the Society. In every department of the Exhibition, there were, we learn, evident marks of improvement in the stock and productions. The Annual Address was delivered by Geo. W. Matthews, Esq., and is published in the Port Tobacco Times.

Talbot Co. Society.—The display at Easton, was, we learn, very satisfactory, though the heavy rains prevented the attendance of visitors in as great numbers as is usual at the exhibitions of this persevering Society.—We notice, that Messrs. Atlee, Didier & Bro., and Sinclair & Co. of this city, had on exhibition a great number of their useful implements and machinery, and competed for the prizes. C. P. Holcomb, Esq. of Delaware, was to have delivered the Annual Address, but in consequence of family affliction was prevented from being present—Col. Geo. W. Hughes, of A. A. County, happened to be present, and being called upon to supply the place of Mr. Holcomb, promptly responded thereto.

Prince George's Co. Society.—We have received the official account of the Proceedings of the Prince George's Exhibition, with the Annual Address of Col. Geo. W. Hughes.—We hope to be able to publish a synopsis of the proceedings of this and other Societies of this State, at their late Exhibitions—and would be gratified also to have it in our power to

present to our readers the several addresses delivered—but our limited space precludes our indulging the hope of accomplishing the latter object—we will, however, endeavor to give copious extracts from them, as opportunity offers.

Start's Wheat and Grass Cutter.—A model of a new Reaping Machine was on exhibition at the late Fair of the Maryland Institute, held in this city, and received a silver medal for the improvement in the raking, by which it is proposed to save the labor of a hand. The patentee, (Mr. H. Start, of Delaware,) says that "it works with half the horse power usually required, and throws off the bunches of grain, without the labor of a raker—bats and small matters do not impede its steadiness in running—it requires no cradle in the field, as it cuts its own way, and will cut and bunch a field without binding after it." If it will accomplish all thus claimed for it, the machine will no doubt come into favor—and the necessity for labor saving machinery becoming more and more evident every year, the demands for Reapers will be constantly on the increase.

By the by, we would suggest to the Executive Committee of our State Society, at its meeting in February, the propriety of offering a handsome piece of plate, say to the value of \$50 to \$100, for the best Reaper, to be tested at the next Harvest. We doubt if the same amount of money could be better appropriated; thousands of farmers in the course of the coming year will require Reapers, and a fair and full test of the efficiency of the many implements of the kind, could then be had. We suppose that there are not less than twenty different Reapers that have been presented to the public within the last five years, and it is very important that it should be accurately determined which is best for the greater number of the farmers of our country. We respectfully refer the matter to the serious consideration of the Society.

Importation of Sheep.—Col. Ware, of Va. has recently imported from England, a lot of five yearling Ewes, of the improved Cotswold breed. We have seen several of the lots heretofore imported by Col. W., on their reaching this city, en route for their future home in Clarke Co. but according to our judgment, the present is decidedly superior to any that have preceded them. The best flock of Sheep of this breed was sold at auction this fall, in England, and the agent of Col. Ware purchased these ewes as the best five of the flock—they of course cost a high figure, independent of the very heavy charges of transportation, which are run up to an enormously high rate—but the public spirited owner will, we hope, be amply remunerated for the liberality he thus evinces in the improvement of this branch of our husbandry, which is growing more and more important each succeeding year.

Horner's Fertilizer.—We refer the reader to the advertisement of Mr. Horner, on another page, in which he presents to his customers the analysis of Dr. Higgins, State Chemist, and a comparison of his manufactured Manure with the Peruvian and Patagonian Guano.

Agricultural Implements.—In addition to the numerous articles in this line, advertised in our pages by our city and other manufacturers, we would direct attention to those offered by Mr. C. B. Rogers, of Philadelphia. Mr. R. has also left at our office a case of samples of Grass Seeds, &c. for public inspection.

The Saturday Post.—By the advertisement on another page, it will be seen that this old and valued family paper commences a new volume on the 1st January. We have before had occasion to refer to its merits, and the high estimate placed upon it by those whose judgment we know is well formed; and we renew our recommendation to all wishing such a journal, to subscribe for it. We look upon it, as holding a somewhat similar position to the literary family papers of the day, that the National Intelligencer does to the political—and we think we cannot say more in its favor.

Plaster after Guano.—A correspondent says: "As to the question of mixing Plaster with Guano, there is one question I should like to propose to the editor, viz: 'what will be the effect of sowing guano upon land by itself, and then, the seed being in the ground, giving it a heavy top-dressing of plaster, so as to arrest the "excursion," of which so much is said?"

Reply by the Editor.—The effect of such application of guano and plaster, would be, to prevent the waste of the ammonia of the former, as every rain would decompose more or less of the plaster, separate the sulphuric acid from the lime, and the sulphuric acid, when liberated, would unite with the ammonia, form a sulphate of ammonia, and hold the latter in reserve, to be taken up by the roots of the plants. The presence of plaster with all organic manures, either directly mixed with them, or broadcasted after they may be applied, tends to prevent the escape of their volatile parts. We prefer them together for two reasons,—first, because, by bringing the two into immediate contact, the action of the plaster is more direct, and, secondly, because the time and expense of one sowing is thereby saved. We go for saving in every way, as time and labor costs money, and we look upon economy as a virtue, which should be practiced by all, and especially by husbandmen.

THE AMERICAN POMOLOGIST.—We have received the first number of a work in the course of publication in Philadelphia; published by *J. H. Hoff*, No. 103 South Seventh street, and edited by *Dr. W. B. Brinckle*, A. M., M. D., entitled "The American Pomologist,"—containing finely colored engravings, accompanied by letter-press descriptions of fruits of American origin."

The present number gives promise, that the work will be executed not only in good taste, and in a way to reflect credit on its publisher and editor, but to impart a degree of the most reliable knowledge upon the qualities and origin of American fruit,—a knowledge greatly needed by the Farming community. *Dr. Brinckle*, the enlightened editor, is eminently qualified to fulfil the task he has undertaken, having practical experience and scientific attainments; superadded to which, he is imbued with that zeal, which is a guaranty, that neither labor nor research will be spared to render his work as honorable to himself, as it will prove beneficial to the fruit-growers of our country. Duly impressed with its value, we trust it will find favor with every lover of good fruit, and, therefore, conscientiously recommend it to the patronage of our readers.

Princess Anne Co. (Va.) Agricultural Society.—We are gratified in noticing, that the farmers of Princess Anne have formed a Society for the promotion of Agriculture, and have elected the following officers, viz:—*Ed. H. Herbert*, Pres.; *Wilson*

H. C. Scott, Wm. Godfrey, and *Isaac N. Baxter*, Vice Presidents; *W. S. Wright*, Recording Secretary; *Hy. F. Woodhouse*, Corresponding Secretary, and *W. Old*, Treasurer.—After the organization, a resolution was adopted, recommending the farmers of adjacent counties to form similar Societies, so that they "may enjoy the pleasure of meeting them all at some central place, (say Norfolk) on the occasion of an Agricultural Fair."

A ploughing match took place at Princess Anne C. H. 31st Oct., which created much interest among the farmers—*Jno. C. Wise*, Esq. afterwards addressed the meeting, "in which he evinced much zealous interest in his subject, styling agriculture, in the language of the illustrious "father of his country," "the most healthy, the most useful, and the most noble employment of man." He earnestly exhorted and entreated the citizens of the county to foster the agricultural interest, as being the basis of prosperity—he urged them to imitate and emulate the noble example of their sister State, Maryland; and finally concluded by moving "that the chair appoint a committee to draft preliminary articles for the organization of a Princess Anne Agricultural Society."

The result of this appeal was the formation of the Society, and the election of the officers as above stated.

REVIEW OF THE TOBACCO & GRAIN MARKETS.

Reported for the American Farmer by J. W. & E. Reynolds.

Since our last report, there has been considerable animation in the Tobacco market, and large sales of all sorts have been made, but at prices a shade lower, growing, we think, out of the fact that large lots of tobacco, held over since spring, have been put into market and immediate sales ordered by the owners; but this certainly cannot permanently affect prices in view of the fact that we have had short crops for five years past; we therefore still hope to see better prices hereafter. Ground leaf is going at \$4½ to 5 for the common sorts, and \$6 to 8 for the good and very fine descriptions; common dark crop and seconds \$3 to 4; good crop \$5 to 6; good and fine reds \$6½ to 8.

Grain.—Red Wheat, 70 to 78c; white, 75 to 82c; ditto for family flour, 85 to 90c. There has been an evident improvement in the price of Wheat within the last week, of say 3 to 5 cts. per bushel. Corn, old white, 54 to 56c; new do. 51 to 54c, if dry; yellow, 56 to 58c. Rye, 70 to 72. Oats, 30 to 33c.

Cattle, demand active, and prices ruled higher the past week—1000 head were offered, 570 of which were sold to butchers, at prices ranging from \$2½ to 3½ on the hoof, equal to \$5 a 6¼ net, and averaging \$3 gross; 430 head were driven to Philadelphia.—Hogs, \$6¼, supply good.—Whiskey, in bbls. 22½c, and in hhd. 21 a 21½c.—Cotton, demand fair, and prices have advanced ¼c. since last steamer's news.—Flour, Howard st. \$3¾ a 3.81¼; City Mills \$3.69 a 3¾.—Barley, Pa. 75c.—Cloverseed, \$4¾ a 5 to 5½.—Plaster, \$3.12 per ton; \$1.12 per bbl. for ground.—Rice, \$3 a 3¾.—Sugar, stock small and holders firm; N. O. \$4.62 a 5.75 for inferior to prime; P. Rico, \$4½ a 6.75; Cuba, \$4½ a 6.

Wool.—Since last month, the wool market has been more active—sales of tub washed at 26 to 28; pulled 26 a 28; unwashed 17 a 18—of fine fleece, none offering of any consequence; it would bring, however, 35 to 45c. as in quality and condition.

Reports by a late arrival represent a short crop of grain in Germany, which if true, may affect prices in this country.

THE PAMUNKY FIVE FIELD SYSTEM.

BALTIMORE, Oct. 14, 1851.

To the Editor of the *American Farmer*—

Sir:—Enclosed you will find a letter from the Hon. Willoughby Newton, in explanation of what he termed in his excellent Address before our State Society last fall, the "Pamunkey five field system."—Being at that time about to change my rotation on two farms, where no tobacco is grown, I determined to adopt Mr. Newton's plan, and so far as I can now judge, it is a good system for improving, especially when "guano and lime" is used—Having obtained his permission to publish it, I think you might do your subscribers a service by inserting it at such time as you can do so.

ED. REYNOLDS.

LINDEN, Dec. 27, 1850.

DEAR SIR:—I duly received your letter, asking an explanation of the "Pamunkey five field System," to which allusion was made in my late Address before the Maryland Agricultural Society. I should have enlarged upon the subject of the rotation of crops, and explained my views fully upon all the different rotations common in Virginia, but I believed that such details would extend the address to an immeasurable length, and make it very tedious in the delivery.

"The five field System" which is now rapidly extending over all the poor and worn lands that are now under improvement by marl, lime, or guano, originated, or at least was first extensively introduced in lower Virginia, on the Pamunkey, and has there wrought wonders, aided by marl and judicious farming. The rotation is corn,—wheat,—clover,—wheat, or clover fallow,—and pasture, and after pasture one year, commencing the round again with corn. This system, if guano be applied to both crops of wheat, on corn land and fallow, or alternately with lime or marl, when calcareous manures are required, will readily increase both the crops and permanent improvement of the land. In the commencement of the rotation, lime had better be applied with the putrescent manures to the corn crop, to be followed by guano on wheat. If this system be perseveringly pursued, I can scarcely see any reasonable limits to the improvement of poor lands, and the increase of the profits of agriculture.

It affords me pleasure to answer your enquiries, which require no apology. I wish I had time to answer them more satisfactorily, but write in great haste, and am with high respect,

Yours, WILLUGHBY NEWTON.

CHARCOAL, PLASTER AND GUANO.

An esteemed subscriber in the neighborhood of "Flippo," Va., in a letter enclosing his subscription, asks us the following questions:

"Please inform me whether a combination of charcoal, plaster and guano, will make a profitable top-dressing, in spring, for wheat."

Theory justifies us in answering our friend in the affirmative. We think, however, that it would have been much better to have applied it when he sowed his wheat last fall, and then to have ploughed it in; but we entertain not the slightest doubt, that, if his wheat-field be top-dressed with the mixture next spring, it will greatly increase the yield of his wheat crop, unless the season should prove a very dry one, as the charcoal, and plaster, will each tend to prevent the escape of the ammoniacal gases of the guano, and, as it were, offer them up as food to the wheat plants.

In advancing this opinion we are fortunately sustained by the practical experience of one of the most enlightened and successful farmers of our state.

In the very able Address delivered by the Hon. James A. Pearce, before the Maryland State Agricultural Society, in 1849, he stated this striking fact, which is directly in point:—

"In April 1845, I applied 350 lbs. [of guano] to an acre of growing wheat, the land being entirely unimproved and very poor. Of course it was applied as a top-dressing, mixed, however, with plaster. The wheat was doubled in quantity, at least, fine clover succeeded it; and in two crops, one of corn, and the other of small grain, last year and the present, the effects are still apparent."

If our correspondent would mix, in the proportion of 200 lbs. of guano, 1 bushel of charcoal, and $\frac{1}{2}$ a bushel of plaster, per acre, and sow the mixture on his wheat field next spring, after the frost is entirely out of the ground, then seed each acre with clover seed, and roll his land, we have no doubt that his wheat crop would be increased five or six bushels to the acre, perhaps more, and that he would have a good stand of clover plants, and a luxuriant crop of the latter next year.

Our opinion is, that guanoed land should always be seeded to clover, or clover and orchard grass.

CULTURE OF BROOM CORN, &c.

Will you please inform me through your paper, the best manner of cultivating Broom Corn? does it require rich land? What soils suit it best? Is it necessary to turn the tassels down, to prevent their growing twisted or ill shapen for broom making,—if so, at what age of the corn should this be done? Ought it to be cut a little green, or entirely ripe? What length of the stalk should be left to the tassel when cut, to be packed for sale? Ought the seed to be taken from the tassel before packing? What is the usual market value of the tassels for broom making, and the market value of the seed?

Respectfully, A SUBSCRIBER.

REPLY.

1. *Cultivation*.—Broom Corn should be cultivated the same as Indian Corn; the ground should be well manured, thoroughly and deeply ploughed, and harrowed until made of fine tilth; the ground should be listed 3 feet by 18 inches wide. In every intersecting list drop from 20 to 30 seed, and cover. When the plants come up and show themselves across the field, or lot, plough between the rows, and dress around the plants with the hoe, so as to eradicate all grass and weeds, and have the soil open to atmospheric influence. The *second working* should be at 10 or 12 days after the first. This should be done with the cultivator through the rows, and around the plants with the hoe. At the *second working*, thin out the plants, so as to leave from 8 to 10 in each hill. The *third working* should be given in a week or ten days after the second, with the cultivator and hoe, as above recommended for the second.

2. *Richness of soils*.—A good crop of broom-corn can only be raised on rich land, except the land be liberally manured. Any manure that is good for Indian corn, is good for broom corn; each require to be well fed.

3. *Of soils*.—Loamy or alluvial soils, rich in vegetable matter, suit it best, and such soils, unless they have been recently limed, will be greatly improved, by applications of lime, marl, or ashes.

4. *Bending tops.*—The tops should be turned down about 2½ feet, say a week before the broom corn be gathered, to facilitate drying.

5. *Time of planting.*—The same as for Indian corn.

6. *Time of harvesting.*—About the middle of the first frost. The stalks should be cut about 8 inches from the brush.

7. *Curing.*—The brush when cut, should be dried on scaffolds, under cover, to prevent injury to its color, from exposure to the weather, as the brighter the color the better price will it bring.

8. The seed should be taken from the brush before being taken to market.

Cleaning seed.—At the Eastward, some use a broom corn hackle or scraper, made for the purpose; while others use a curry-comb.

9. *Value of brush,* as in quality, from 4 to 7 cts. per pound, the price depending upon the care bestowed on its culture and curing.

10. *Product per acre* ranges from 400 to 1000 lbs., the product depending on goodness of soil, degree of manuring, season, and cleanliness of culture.

PRESERVING SWEET POTATOES.

INDIAN TOWN, N. C., Oct. 22, '51.

To the Editor of the American Farmer—

DEAR SIR:—Your letter of the 8th inst. soliciting information as to the best manner of preserving sweet potatoes, after taking up, came to hand last mail. I embrace the first opportunity to give you the result of my experience; in doing which, I shall begin a little sooner than the time pointed out, and give you also the plan pursued in taking them up.

Every cultivator of potatoes knows that they grow best in light sandy land, and that by the time they should be housed (between the 20th and 31st of October) much of the dirt is washed from the top of the hills or ridges, thereby leaving the ends of the roots naked. They also know that in removing the vines with a hoe, many of the top ends are bruised and broken off. To prevent thus injuring them, I use a common butcher knife, with which the vines are cut about six inches below the stem. This is the most expeditious as well as safest way, particularly when the vines are stout and numerous. The operation is performed by the small hands; in doing which, they walk backwards. After the vines are cut, a small furrow is made on each side, as close up as it can be done without interfering with the potatoes. This saves much hoe labor and completely covers up the vines. The remaining earth is then carefully removed with hoes, and the potatoes taken out and placed in tubs.—With a cart, having a long body, the tubs are taken to my cellar, and the potatoes are stowed away with great care. The room in which they are kept is fifteen by thirty-six feet, the floor of which is 12 inches below the surface of the earth. It has three windows, with shutters, and a partition door, so placed that the room, or at least one end of it, can be freely ventilated without a current of air either passing through or over the potatoes. The floor is of brick, over which I put a good bed of pine leaves or flag trash; and to protect the roots from cold, the walls are lined with the same. To protect them from an undue quantity of air, a thin covering is placed over them of pine leaves, which should be increased in thickness in very cold weather. The partition door and one of the windows, remain open, except in extreme cold weather, all

the winter. Much of the air that passes through the potato room, first passes through an adjoining room of much larger size, in which salted meats and salt are constantly kept. This, I think, aids in preserving them, although too much salted air will rot them in a very short time.

The whole secret consists in placing them away without bruising them—in keeping them at a proper temperature, in a large room, freely ventilated—and in preventing a current of air from passing through or over them.

My cellar is never clear of potatoes. I have kept them eighteen months as sound, and nearly as heavy as they were when taken from the earth.

If in summer they put forth sprouts, let them be carefully rubbed off. Potatoes are not injured after the first of May by handling, if not roughly done.

Potatoes that are kept too warm in winter, will sprout, lose their flavor, and become corky and worthless. If kept too cold, they will continue good until spring, and will then rot about as fast as unsalted meat.

I forgot to say that the room over the potatoes is used as a dining room, and is well carpeted, and that the potatoes are placed in the chimney end.

Very respectfully, GIDEON C. MARCHANT.

[At the suggestion of Dr. G. B. Smith, information which we sought on the preservation of the sweet potato after being taken from the ground, was asked for, of Dr. Marchant, and we return him our thanks for his prompt and very satisfactory reply.—Ed.]

➤ GREAT CROPS OF CORN. ➤

"To show what American soil and climate have done, and are capable of doing, we give below a statement of the premium crops of corn grown in Kentucky in the year 1850. There were nine competitors, and the surface in cultivation ten acres by each competitor. Their names and the product of each per acre were as follows:—

J. Matson, 37 barrels, 4 bushels, and 1 quart.

Peter Pean, 37 barrels, 4 bushels.

S. H. Chew, 27½ barrels.

J. Hutchcraft, 23 barrels.

A. Vameter, 21 barrels and 3½ bushels.

H. Hedges, 21 barrels and 2 bushels.

E. W. Hockaday, 20 barrels.

Dr. B. W. Dudley, 20 barrels,

H. Varnon, 19 barrels and 3 bushels."

"The ninety acres cultivated for premiums yielded 10,960 bushels and ten quarts, being an average of 121 bushels and 24 quarts per acre."—Dr. Daniel Lee's article on "The Study of Soils," in Patent Office Report, 1850.

By the way, Dr. Lee's article on "The Study of Soils," is a great paper, worthy of the study of every one who tills the land. We consider it worth the whole expense of printing the report. And while we say this, we must thank the Commissioner for sending it to us.—Ed. Am. Farmer.

LIVE AND DEAD WEIGHT OF HOGS.—Proportion of live to net weight.—Mr. Samuel Linn, Junr., of Highland County, Ohio, in the Patent Office Report, gives the following:

"The prevailing custom here, is to deduct one-fifth. But on a good breed of hogs, fattened, repeated experiments have convinced me that this is too much. A hog killed last season weighed alive 242 pounds, and when dressed, 202 pounds, the loss being about one-sixth, which I think is about the true estimate."

CULTURE OF LUCERNE.

We have often thought that the reason why this excellent forage plant had never been generally introduced into the culture of our country, arose from the method of culture which we borrowed from England, viz:—that of cultivating it in drills, a plan too minute, and involving too much expense, in a go-ahead country like ours, where labor is dear. In the volume of "Young's Travels in France," we notice a very different system of culture—one infinitely better suited to the condition and habits of our agriculturists, and, therefore, we shall copy from his notes of travel through the lucerne-growing portions of France such parts, as will develop the plan of cultivation there successfully pursued, to our readers.

"*Pinjan*.—Sow 15 lbs. the sesterree; [about 20 lbs. of seed to our acre] always alone; cut 5 times a year, and lasts 15 years, yielding 1200 lbs. dry hay each cutting." * * "When it is weedy they clean it by ploughing in the winter with a narrow pointed share, choosing frosty weather, which kills the weeds, but not the lucerne; an admirable practice, and apparently the origin of Rogers' harrowing." * * "When it is worn out, their conduct is no less excellent: greatly as it improves the land, they do not venture to sow wheat, but barley and oats for hay, not corn, for two years in succession; a great deal of lucerne pushing from the old roots, would considerably injure any corn, but add equally to the value of a crop of forage as they call it; and the mowing early cuts off abundance of weeds; after these two crops they sow wheat, which proves very fine." [In our country Lucerne should be followed by Indian corn, to afford an opportunity to the culturist to clean the ground preparatory to the crop of wheat. The lucerne should be thoroughly harrowed each fall to eradicate the weeds.—*Ed. Am. Farmer.*]

"*Blois*.—Pieces of it on a poor and almost blowing sand; lasts 5 years; cut it thrice, and the produce more valuable than corn."

"*Orleans*.—Lasts 8 or 9 years, and is cut thrice."

"*Petiviers*.—Lasts 12 or 15 years."

"*Melun*.—Lasts 10 years; it is cut thrice, and the product more valuable than wheat."

"*Yersaint*.—Cut thrice, the first yields 400 bolts of hay; the second 200, the third 100, in all 700, about 4 tons per acre. * * "The finest of all their corn crops [small grain] are those which succeed it."

"*Montgeron*.—It is the best feature of their husbandry. Sow 22 lbs. of seed per arpent, with oats. And then wheat, getting by far the finest crops they ever experience."

"*Le court*.—The general custom is to sow it with oats. It lasts, with tolerable management, 10 or 12 years; but on a rich deep soil, on a dry bottom, it has been known to reach the duration of 20 years. To destroy the weeds which arise in it, they harrow it partially with iron toothed harrows, and manure it with rotten dung. It is always cut three times a year, and sometimes four; but that is not common: a good arpent would let at 150 livres a year, which is more than any other production of the country. The finest of all may give 1600 bottles of hay, each of 12 lbs. which is above 7 tons the English acre. * A vast object in the culture is the great improvement it works in the land; when they plough it up, they do not venture to have wheat, as the luxuriance would be such that the product would be all straw. They take 2, 3, 4, and even 5

crops of oats in succession, which are prodigiously great; and when the oats decline, they sow wheat, and get a very fine crop."

Lucerne, as will be seen by the above excerpts, in France, is sown broadcast, alone, and with oats, and that it continues for many years, to not only yield good crops, but to so fertilize the soil, as to render it too strong for wheat, until its fertility is reduced by the growth of intervening crops. Thus proving that there is no absolute necessity for growing it by the drill culture, and that all the weeding necessary, can be effected by the harrow. By this operation, the grass and weeds are destroyed,—so also are the heads of lucerne plants cut off, but owing to the great depth which the roots penetrate the earth, the operation does not interfere with their subsequent growth.

In setting a lot of Lucerne, we take it, that the culturist should be careful to give the soil a previous cleaning preparation, plough deep, manure freely, and treat the earth to lime, marl, or ashes.

We feel no hesitation in recommending the broadcast culture of lucerne to the favorable consideration of our readers.—*Ed. Am. Farmer.*

GUANO, IN COMPOST, FOR CORN.

A correspondent at West Point, N. C. writes us as follows:

"I am about to commence a small farm some miles distant, which lies on a small stream of water, (which, in fact, runs through the plantation) and I shall, the present year, require an additional amount of manure for that place, but I cannot spare it, and shall not perhaps during the winter be able to accumulate a great deal, as there is so little on the place, except leaves. Now the question is, can I realize profit in purchasing Peruvian Guano, at a cost (delivered here) which will be at least \$55 a 60 per ton, and mix it with the deposits on this creek, and putting in the corn hill at planting. Anything beyond this, the present year, I cannot do—broadcasting will be more than I can accomplish, though I believe it to be the best. An answer to this, with any suggestions of your own, as to the best way to manage the compost, and whether Plaster will be an improvement, &c., will be duly appreciated by Your friend and ob't serv't,

JAS. S. LEATHERS.

REPLY.

We regret the inability of our correspondent to broadcast his land, as any system of manuring which does not embrace the covering the whole surface, is, and from the very nature of things, must be, partial and defective,—and particularly must it be so considered in connection with the corn-crop. The lateral roots of the corn plant extend from row to row, and as their mouths or feeders are placed at the extreme points, these, of course can only avail themselves of such food as may be in contact with them. Manuring in the hill, has a very salutary influence, in urging forward the growth of the plant in the incipient stages of its vegetation, before its roots push forward beyond the range of the manure in the hill—a matter of great moment in the cultivation of corn—but, if the soil beyond this point, be deficient in organic and inorganic food, as a necessary consequence, when the roots of the plants extend beyond the reach of the supply of food, its growth must be checked.

But, as in the case of our correspondent, impos-

sibilities cannot be achieved, we would recommend him to form a compost of the deposits of his creek, wood's mould and leaves, and pine shatters, Guano, and plaster, in the following manner and proportions; and would advise him, *to make his compost heaps as speedily as possible*, in order that decomposition may be brought about. He should spread 10 loads of the substances named, on the earth, level it about 10 inches deep, over that spread 100 lbs. of guano, and 1 peck of plaster on that,—or he may previously mix the guano and plaster together, and spread it in its mixed form,—over that spread 10 other loads of the enumerated substances, then plaster and guano, and so on until his pile is four or five feet high, let the *last layer* be of the rough materials. The pile should be narrowed as it increases in height, so as to be brought to a cone-like form, and should be patted down with the spade or shovel. When the time arrives for planting his corn, he should shovel over his compost so as to thoroughly mix the whole together and produce an equality in its strength. Of this *compost*, he should give each hill of corn, as the seed may be dropped, a shovel full.

It would, however, be infinitely better for him, to increase the quantity of the *raw material* to 20 loads, and, in that case, to *broadcast* the compost over the whole field, reserving as much for *hill-manning*, as will give to each hill a handful. The cost of labor which may be involved, will be liberally reimbursed, in the measure of increased product, which, we believe, will be quadrupled, while the land itself will receive such a degree of melioration, as to be equal to sustaining a rotation of four years.

At the last working of the corn—which should be cultivated flat with the cultivator and hoe—he should seed his field with peas, and dress with a bushel of plaster, per acre—the vines of which should be ploughed under when his corn is harvested. If he should pursue this course, he may sow wheat on his corn-land thus treated, with the prospect of a good crop, the season being favorable; and he should, by all means, the succeeding spring, sow clover, or clover and grass seeds, on the wheat. To ensure luxuriant growth to the latter crop, it would be well to give the clover, or clover and grass, as the case may be, the next fall, a dressing of lime or marl, combined with ashes, and to dress his field thus occupied each spring, early, with a bushel of plaster.

We believe that there is no doubt, if our correspondent uses guano in the way indicated by us, that he will “*realize a profit*.” If he had ashes, ten or twenty bushels to the acre, if added to the compost, would materially enhance its value.

A word or so more. If our friend concludes to broadcast his field—and he certainly will promote his interest if he does—and to use 20 loads per acre, of the rough material, which would be best, he should increase the quantity of Guano to 200 lbs.—the plaster to half a bushel, and add ashes, as advised above, the latter would greatly improve the value of his compost, and he would then be sure, that his corn would get all the kinds of food required by its wants.

A bushel or two of bones if added to the quantity of compost to be allowed to an acre of the land, would greatly enhance its *lasting value*, by continuing the needed supply of phosphoric acid.—*Editor of the American Farmer.*

For the American Farmer.

VALUE OF PHOSPHATES IN AGRICULTURE.

Until a period comparatively recent, the earth was looked upon as a “*bounteous mother*,” containing within her broad bosom an inexhaustible supply of fertilizing elements, and needing but an annual cultivation, to pour forth, under ordinary circumstances, abundant and nutritious harvests. And yet, practically, it was found that the most prolific soils, even with a large supply of common manures, and attentive culture, gradually lost their productive power, and yielded less and less to the acre. The average wheat crop of the State of New York, which, thirty years ago, was 30 bushels to the acre, dwindled down to about 12; that of Ohio, from 35 bushels to the acre, has become 15; and there is no doubt that the productive powers of the lands of all the states, have generally suffered a similar diminution. “*Worn out lands*” became an alarmingly increasing term; and the spectacle of industrious farmers, removing to the West, where they could find *new lands* to wear out, was by no means uncommon.

At that day, it had never occurred to the tiller of the soil, that with every load of hay, corn, wheat or other products which he took from the ground, he carried away a large supply of those ingredients which are essential to the growth of those particular crops; and although Nature, in her wonderful laboratory, was doing all in her power to reproduce the fertilizing elements, still, his draughts were greater than the receipts into her treasury, and he was steadily and surely impoverishing the soil. If the cultivator had been told that “*with every fourteen tons of fodder taken from his ground, he carried away two casks of potash, two casks of lime, one cask of soda, a carboy of oil of vitriol, a large demi-john of phosphoric acid, and other essential ingredients, which were as certainly stowed away in his mows, as if conveyed in casks and carboys,*” he would have looked surprised and probably felt incredulous; and yet such is the indisputable fact.

At the present time, when science has done so much for agriculture, and practical farmers are disposed to look into the reason of things, these matters are beginning to be better understood; and it is a recognized fact, that when the agriculturist sells a load of hay, a crop of wheat, or any other product, he sells a large portion of valuable salts derived from the soil, the annual abstraction of which must exhaust and render unproductive the soil, unless its place is supplied by a manure containing in sufficient quantities the salts abstracted.

It becomes an interesting inquiry then, what are the prominent ingredients of the common vegetable products, on which the farmer relies for sustenance and support? The answer is found at once in the analyses which have been made by scientific men, of corn, wheat, oats, rye, &c., shewing precisely what proportions of potash, lime, magnesia, silica, phosphoric and sulphuric acids, &c. are contained in the respective products. From these we find that of Wheat, phosphoric acid, potash, soda, lime and magnesia, constitute nearly *ninety-eight parts in a hundred*;—of Indian Corn, *ninety-five*;—of Oats, *eighty-six*;—of Rye, *ninety-nine*;—of Barley, *seventy-one*;—of Rice, *ninety-six*;—of Beans, *ninety-six*;—of Peas, *ninety*; and the list might be indefinitely extended.

The above facts show at once, to the humblest comprehension, the nature of the elements which

are abstracted from the soil by the respective crops, and which it is absolutely necessary to return to the soil, in order to restore or continue its powers of production. The above elements, however, neither exist in the earth nor can they be exhibited in any manure, distinct and uncombined; but, in obedience to great chemical laws of affinity, unite with each other and form more or less soluble salts. Phosphoric acid unites with potash, lime, soda and magnesia, forming **PHOSPHATES** of these articles respectively, and it is these *phosphates* thus combined, which play a most important part in the process of the production and nourishment of vegetable products, and fitting them for the sustenance of man.

How, then, shall the agriculturist obtain, and in what form best apply these essential elements? They may unquestionably be artificially produced; but if they can be found in a natural state, they will be least expensive and best adapted for the farmer's use; for in that case, they exist in a state of division vastly more minute than can be produced by artificial means, and when incorporated with the soil, will be presented to the roots of plants in a form the best calculated for absorption and distribution.

The discovery of *guano* has, in a providential manner, met the very want of the times, in reference to the re-invigoration of certain kinds of soil, since this manure furnishes the elements most needed to supply the waste arising from cultivation, and to develop vegetation; but even in regard to this, a judicious discrimination must be used, and that quality selected which presents the most abundant supply of those essential ingredients, the **PHOSPHATES**.

In a subsequent number, the action of the *Phosphates* in the development of plants, as well as some economic considerations connected with their use will be presented.

S. F. S.

FRUIT TREES—DISEASES, AND INSECTS. (Concluded.)

THE PRINCIPAL INSECTS INJURIOUS TO FRUIT TREES.

Aphis or *plant louse*.—There are several kinds of these. The two most troublesome to fruit trees are the green and black, small soft insects that appear suddenly in immense quantities on the young shoots of the trees, suck their juices, and consequently arrest their growth. They multiply with wonderful rapidity. It is said that *one individual in five generations might be the progenitor of six thousand millions*. Were it not that they are easily destroyed, they would present an obstacle almost insuperable in the propagation and culture of trees.

There are many ways of accomplishing their destruction. Our plan is to prepare a barrel of tobacco juice, by steeping stems for several days until the juice is a dark brown, like strong beer; we then mix this with a solution of soft soap suds. A pail is filled with this, and the ends of the shoots where the insects are assembled are brought down and dipped into the liquid. One dip is enough. It is applied to the heads of large trees by means of a hand or garden syringe. It should be done in the evening. The liquid may be so strong as to injure the foliage, hence it will be well for persons using it for the first time, to test it on one or two subjects before applying it extensively. This application must be repeated as often as any of the aphides make their appearance. The dry weather of mid-

summer is generally the most favorable for their appearance.

The Woolly Aphis or *American Blight*.—This is a small insect, covered with a white woolly substance that conceals its body. They infest the apple tree in particular, both roots and branches, living upon the sap of the bark, producing small warts or granulations on it by the punctures. They are more particularly troublesome on old rough-barked trees, as they lodge in the crevices and are difficult to reach. The wind carries them from one place to another by the light down in which they are enveloped, and thus they spread quickly from one end of the plantation to the other. Not a moment should be lost in destroying the first one that makes its appearance. Where the bark is rough it should be scraped smooth; if the roots be affected, the earth should be removed, and every part washed, and every crevice filled with the following preparation, recommended in Harris' Treatise: "Two parts of soft soap and eight of water, mixed with lime enough to bring it to the consistency of white wash, to be put on with a brush." A solution of two pounds of potash in seven quarts of water will answer. Fresh earth should be put upon the roots.

The Scaly Aphis or *Black Louse*.—This is a dark brown scale insect, that infests the bark of the apple tree. They are of a dark brown color just like the bark, and are not easily seen unless looked for. They attach themselves closely to the bark, and sometimes are so numerous as to form a complete coating. They seldom appear on thrifty growing trees in good soil; but where the soil is damp and cold, and the trees growing feebly, this insect may be looked for. June is the time to destroy them, when they are young. At other times they are hard, and able to resist any ordinary remedy. The same application recommended for the *aphis*, applied to them with a hard brush, will effect their destruction. Where they have been left for a long time undisturbed, and have pretty well covered the tree, the quickest and best remedy is to *destroy tree and all*, unless it possesses some extraordinary claim for indulgence. Prof. Harris mentions having found a reddish brown bark louse on his grape-vine, arranged in rows one behind another in the crevices of the bark."—*Barry's Fruit Garden*.

SLAKING LIME WITH SALT.

The *salt-mixture*, as it is termed, is treated by some writers as quite a modern invention; unfortunately, however, for all such pretensions, the history is still extant, showing the slaking of lime by salt brine, to be a practice of very respectable old age. Mr. C. W. Johnson, the author of the *Farmer's Encyclopædia*, says, that

"A mixture of salt and lime was recommended as a manure by the celebrated German chemist, Glauber, in his '*Hints for the prosperity of Agriculture*,' more than two centuries since:—that '*Christopher Packe*, who in 1688, published a huge folio translation of Glauber's works, enforces the value of this fertilizing compound with much earnestness in his preface, describing it '*as the cheapest of all mixtures for the enriching of poor barren land.*'"

Pursuing this subject still further, Mr. Johnson observes:

"*Salt and Lime* was used by Mr. Mitchell, of Ayr, many years since, and he, not knowing what others had done with this fertilizer before his time, considered himself to be the discoverer. He thus described his process: Take 33 bushels of lime, and

slake it with sea-water, previously boiled to the saturated state. This quantity is sufficient for an acre of ground, and may be either thrown out of the carts with a shovel over the land in the above state, or made into compost with 40 loads of moss or earth, in which state it will be found to pay fully for the additional labor, and is sufficient for an acre of fallow ground, ever so reduced before."

By slaking with sea-water, the decomposition which takes place forms the "muriate and sulphate of lime, mineral alkali in an uncombined state, also muriate and carbonate of soda."

But as those who are remote from the sea cannot avail themselves of sea-water, Mr. Johnson suggests the following means of arriving, substantially, at the same general result:—

"Every farmer," he says, "has it in his power, even in the most inland situations, to procure this most excellent manure for the use of his farm, by means of a mixture of two parts lime and one part of common salt, and suffering it to remain incorporated in a shady place, or covering with sods, for 2 or 3 months; a plan which I suggested some years since. By this process a gradual decomposition takes place, muriate of lime and soda are formed, the whole mass speedily becoming encrusted with alkali. There is another advantage to be derived from the adoption of this process, besides the formation of soda, viz., that the muriate of lime is one of the most deliquescent or moisture-absorbing substances with which we are acquainted; and, in consequence, whenever it exists in a soil, the warmth of the sun has, in summer, much less influence on it than it would otherwise have."

"I would especially warn those who try the effect of a mixture of salt and lime, to attend carefully to the directions I have given, and not, as some farmers have done, to use the mixed salt and lime immediately, before any decomposition has taken place.—After it has been well mixed together in a dry state, it should be allowed to remain 2 or 3 months undisturbed, and then applied at the rate of from 35 to 60 bushels per acre, either by sowing it out of a seed-basket, or mixed with earth, and spread in the usual way. It is necessary to give the mixture time, since the decomposition proceeds very slowly, and is not to be hastened by any simple process."

We have never used lime and salt in either of the ways herein spoken of; but we have broadcasted lime and salt upon the land, at the same time, on part of a field of corn,—the remainder of the field was treated to lime alone. Both parts had been well manured previously, and both yielded well.—There was, however, a very marked difference in the moisture of the soil. The part limed and salted continued moist throughout the season; whereas, the other part suffered greatly from the drought. The blades of the corn grown on the former preserved their greenness and freshness, long after those on the latter were wilted and curled up. There was another difference, which we observed—the corn on the lime and salted land, did not mature as soon as the other by a few days,—the difference was not sufficient, however, to interfere with its ripening in good time. From the fact stated, as to its power of maintaining moisture, we have no question, that the salt and lime mixture, would make an admirable top-dressing for meadows and grass lands generally. Mr. Johnson commends it as a top-dressing for wheat, but cautions against its use until it shall have lain long enough in the compost heap to become

thoroughly decomposed. We believe that the *refuse salt* of meat and fish packers, which can be had for a few cents a bushel, would answer as well as any other kind.—*Editor of the American Farmer.*

DIMENSIONS OF CORN HOUSES.—Farmers are sometimes at a loss to know of what dimensions to construct their corn-houses and other grain-houses, so as to accommodate their anticipated crops. The following short process, though not exactly accurate, is sufficiently so for all practical purposes. By multiplying the length, breadth, and height, into cubic feet, and deducting *one-fifth* from the result, the capacity of the house will be sufficiently nearly ascertained,—as per example. What number of bushels will a house 12 feet long, 8 feet wide, and 10 feet high, hold?

12
10
—
120
8
—
5960
192

Answer 768 bushels.

Now, if we make a nice calculation, we will find that as there is 2152.40 cubic inches in a Winchester bushel, and there are 1,658,880 cubic inches in a house of the above dimensions, so will it contain 770 bushels and a fraction. To save time then, in minute calculations, as the above rule is sufficiently accurate for all practical purposes, the short cut is the economic one.

MANURING FOR WHEAT IN SCOTLAND.

We copy from Stephens' "*Farmer's Guide*," a few experiments in the growth of wheat, with the double purpose of showing the effects of various manures when applied to this crop, and that no dread is entertained amongst the most enlightened farmers of that country, of *giving wheat something to eat*. It will be well to bear in mind also, that the soils upon which the experiments were made, were *improved lands—not exhausted ones*—which fact is proven by the produce upon the unmanured acres.

Mr. Alexander F. Gardener, steward to Mr. Fleming of Barrochan, Renfrewshire, applied 5 cwt. of rape-cake dust to the acre, at a cost of 33s., as a top-dressing, on the 12th of May, 1843, on White Hunter's wheat, sown in Oct. 1842, and obtained 48½ bushels of wheat of 62 lbs. to the bushel, 1224 stones of straw from the acre. That which received no dressing yielded 32 bushels of wheat of 62 lbs., and 824 stones of straw. The increase produced by the dressing was therefore 16½ bushels of wheat, and 400 stones of straw to the acre, affording a profit thus:—

16½ bushels wheat at 5s.,	£41.13
400 stones straw at 2d.,	3.68
	—
	7.7.11
Deduct cost of rape cake	1.13.0
	—
	Profit, £6.14.11

Mr. Alexander James Main, steward to Mr. Wardlaw Ramsey, at Whitehill, Mid-Lothian, applied 13 cwt. of *nightsoil* to the acre at £5 per ton, at a cost of £3.5s. an acre, as a top-dressing, spread on 20th May, 1845, upon wheat sown on the 27th Sept.

1844, which had been manured with 14 cwt. of rape-cake dust to the acre, at a cost of £3.5s., and obtained on the 24th September 1845, 48 bushels of wheat of 52 lbs. to the bushel, and 440 stones of straw. The land that had been manured with the rape-cake only yielded 36½ bushels of wheat, of 54 lbs. to the bushel, and 390 stones of straw. The increase realized by the dressing was therefore 11½ bushels of wheat, and 50 stones of straw, incurring this loss:—

11½ bushels of wheat at 5s.,	£2.16.3
50 stones of straw at 2d.,	0. 8.4

	£3. 4.7
Deduct value of nightsoil	3. 5.0

Loss, £0. 0.7

He tried the effects of salt—*Saltpetre refuse*, obtained from powder mills, of which he applied 3 cwt. the acre, at 14s. the cwt., at a cost of £2.2s. to the acre, and obtained 57½ bushels of Hopetown wheat, of 53½ lbs. to the bushel, and 354 stones 4 lbs. of straw. The ground not manured with the saltpetre refuse yielded 40 bushels of wheat of 54½ lbs. to the bushel, and 217 stones of straw. The increase of crop derived from the dressing was 17½ bushels of wheat, and 137 stones 10 lbs. of straw. The results stand thus:—

17½ bushels of wheat at 5s.,	£4.7.6
137 stones of straw at 2d.,	1.3.9

	£5.11.3
Deduct the value of saltpetre refuse	2. 2.0

Profit £3. 9.3 per acre.

Mr. Main tried the effects of the combined action of several specific manures on Hunter's wheat, which was raised on light clay soil resting on impervious clay soil, many parts of which was full of stones and naturally very wet. It was drained in 1846, at 17 feet apart, and 2 feet deep, and a beneficial change was the consequence. The land was bare fallowed after being drained, and manured with 18 tons of farm-yard dung, and 6 cwt. of rape-cake dust an acre. The wheat was sown in the autumn of 1846, and cut on the 10th and weighed on the 15th September, 1847. The special manures consisted as follows:—

Bones dissolved	104 lbs. at 7s. the cwt.	£0. 6.4½
Sulphuric acid	53 lbs. at 12d. "	0. 5.6½
Carbonate of Potash	21 lbs. at 35s. "	0. 8.1½
Carbonate of soda	17 lbs. at 12s. "	0. 1.9½
Carbonate of Magnesia	60 lbs. at 22s. "	0.11.9½
		£1.13.8

This mixture was not applied, from fortuitous circumstances, until the 31st May, 1847, and drought set in immediately thereafter; but the produce obtained was 54½ bushels of 52 lbs. of wheat and 263 stones of straw, while the land that was not top-dressed only gave 45½ bushels of 52½ lbs. of wheat, and 202 stones of straw—the difference in favor of the top-dressing being 9½ bushels of wheat, and 61 stones of straw. The result stands thus:—

9½ bushels of wheat at 5s.	£2. 7.6
61 stones of straw at 2d.	0.10.2

Deduct the value of the manure

2.17.8
1.13.8

Profit £2. 4.0

Planting Peach Seed.—With a request for some of the Peach Stones, the receipt of which was noticed recently, we received from a correspondent in Frederick Co. Md. the following hint in regard to planting them:

"While on the subject, let me suggest the propriety of invariably planting the seed of peaches on the end, small end down, as I am informed by those well acquainted with the culture of the peach and other fruits, that none others will grow but those thus inserted. I have known baskets full of seed planted carefully with the flat side down, and none to come up, save a few that chanced probably to be rather on the end, and that may account for the great scarcity of peach scions in our orchards and along our fence rows, when if all grew that were covered with earth, our orchards and fence rows would be a perfect hedge."

In reply to a query about planting peach stones, we copy the following from Cole's American Fruit Book:

PROPAGATION. The peach is easily propagated by seeds and budding; but with difficulty by grafting, layers, or cuttings. There are some fixed varieties, which, if cultivated at a distance from other trees, so as not to mix with the blossom, will invariably produce the same from seed; they are propagated with less trouble, and the trees are more hardy and durable. With proper attention, a complete assortment of peaches might be obtained in this way. We have several valuable fixed varieties, and are making experiments to obtain others.

The following is a good mode. Plant stones from a superior seedling, standing alone, and if all planted, to the number of 10 or 15, produce precisely the same fruit as the parent, then the variety may be regarded as fixed. If they vary, make an experiment on the best, if superior, removing others near them, and test their offspring in the same way. Some cultivators plant stones of the best varieties, and never bud; they usually get good fruit, and succeed as well in the North as those who bud the finest varieties.

In raising stocks, or seedling kinds, the stones should be grown in the North, for northern culture, and the late kinds make the most hardy stocks. When taken from the meat, spread and dry in the shade, and keep in cool place; drying will not injure them, but have them spread thin, that they may not mould. Let them remain till late in fall, or mid-winter, and then pour on water, and soon drain it off, and put them in moderately moist sand or loam, in a box, or cask, set in the cellar; cover close with a moist mat, cloth, or moss, that the sand may not dry, and wet it a little occasionally, especially if the lot be small. Or as soon as out of the flesh, or before winter, bury in a light soil more than a foot deep.

In either case, when ready to plant in spring, with a light hammer crack the stones, striking a gentle blow on the side edge, take out the meat, and plant as you would corn, and about as deep. This may be done in the evening, or on a stormy day, and the meats may be kept a week in the cellar, spreading thinly, to prevent moulding, and covering, when warm and airy, to prevent drying. These directions, which we give from our own experience, contain, in a few words, more useful information on this point than all the volumes that have been published on the subject. If the stones be planted in the fall, they may not crack open during winter, and may be lost; and if they are covered up in the

earth, near the surface, preparatory to spring planting, they may crack and grow early, before the land is dry enough to plough. But in the way we have named, they are ready early, and yet they may be kept good till June. In the spring we have covered them 18 inches deep, in a light soil in the shade, and kept them good till the next spring.

We have trees from stones that were kept over one summer and they came up as well as others of the previous year. Yet all seeds generally lose something of their vitality by long keeping in any situation.

Plant in a recently ploughed, light, mellow soil, in drills 4 feet apart, and if the seeds are scarce, and appear very good, plant them 1 foot apart; but if they are plenty, plant them a few inches apart, and when too thick, remove the superfluous to thin or vacant places, or to new lots, when from 3 to 5 inches high, with a transplanting trowel. Cultivate the land well, and if the trees get a good growth, they will be in order for budding the first year. Some prefer letting them remain till 2 years old. But with a suitable soil and good culture, the peach is large enough for budding the first year, and for transplanting the second; we never want larger trees, for the peach is short-lived, and the sooner it is permanently set the better.

RENOVATION OF OLD ASPARAGUS BEDS.—"A Lady Subscriber," of Petersburg, Va., asks us, to tell her how to renovate old asparagus beds, and how to form new ones? With the first branch of her request, we comply with great pleasure,—with the last, our want of space, will prevent us for the present, but at the proper time next spring, will give it attention. If the vitality of the roots of the asparagus bed have not been enfeebled by age, she may restore their yielding properties, by pursuing the following plan:

The bed should be cleared of all stalks, grass, and weeds, and then dressed with a compost made of 7 parts rotten dung and 1 part ashes; the compost should be forked in between the rows carefully, so as not to injure the crowns of the roots, then rake and strew salt over the bed with a pretty free hand. This done, cover over the bed with straw, which should remain on until the plants get above ground next spring, when the straw should be carefully removed, and the ground be given another top-dressing of similar compost, which should be forked in, and the bed receive another dressing of salt.

JOHN FEAST, Florist and Seedsman,

279 Lexington street, Baltimore,



OFFERS an extensive collection of Hardy Trees, Shrubs and Evergreens, as Auricularias, Deodora Cedars, Norway Spruce, Cypressess, Balm Gilead, Yews, Hollies, Cryptomes, Roses of all the finest varieties; Dahlias, Geraniums, and the choicest Camellias; Grapvines, with an extensive collection of Greenhouse Plants, including the most rare.

Also, Garden and Flower Seeds, with almost every thing in his line, on the most liberal terms and lowest rates. Bouquets and Cut Flowers furnished in the best style.

Experienced Gardeners recommended by applying, post paid. nov. 1-4t

FOR SALE—FANCY PIGEONS, of the most choice variety, such as Carriers, Trumpeters, Turbitts, Nuns, Swallows, Snells, Magpies, Ruff Necks, Fantails, Tumblers, &c. Also, the large Shanghai or China FOWLS; Dorking, Spanish and Poland Fowls.—Eggs from any of the above breed safely packed to send any distance, by

THOMAS S. GADDESS, 35 German st. Balto. Md.
An exhibition of the above will be made at the Cattle Show oct. 1-2t

Fresh Imported Dutch Bulbous Roots.



THE subscribers have just received in the finest possible condition, a large and very complete assortment of **Bulbous Roots**, embracing every desirable variety of single and double Hyacinths for flowering, in pots and glasses, or for bedding out.—Early *Roman Narcissus* (usually flowers about Christmas); the best varieties of *Polyanthus Narcissus*; *Crocus*, some 25 named varieties; early and late, single and double Tulips; Jonquilles, Snow-drops, Crown Imperials, Fritillarias, Iris, *Gladiolus Ixias*, Lilacs, Double *Narcissus*, *Ranunculus*, *Anemones*, *Arums*, *Vaccinatum*, *Aconites*, *Colchicums*, &c., &c.; all of the best qualities, imported to order, from the oldest and most extensive Flower Nursery in Holland, warranted sound, true to name and color, and at prices as low as are usually paid for inferior roots at auction—can be packed and safely sent to any part of the United States.—A large assortment of plain and coloured China and Glass Hyacinth Glasses, fancy *Crocus Pots*, &c., &c. always on hand.

Just published,—Thorburn's Descriptive Bulb Catalogue for 1851, with prices and full directions for the management and cultivation of Bulbs in the parlor or garden, furnished gratuitously to purchasers and Post paid applicants.

J. M. THORBURN, & CO.,

15 John st., New York.

Fresh Garden, Field and Flower Seeds, of the finest quality. Bird Seed of all kinds. Catalogues furnished, and dealers supplied on the most liberal terms. Oct. 1-2t

ANDRE LEROY,

Nurseryman, at Angers, France,



RETURNS his thanks for past favors, and begs leave to inform his friends and the public in general that his catalogue for 1851 is now ready, and will be had on application to his agent, Mr. E. BOSSANGE, 138 Pearl street, New York. He offers for sale a large collection of the finest Fruit, Forest and Ornamental TREES of all kinds, SHRUBS, ROSES, &c. The superior quality of his Trees is already well known in the United States, and the experience he has of packing up Trees to be sent abroad, gives him a noted advantage over all other Nurserymen. Orders had better be sent early, as although his Nursery is the largest in France, the number of some new kinds of trees are limited, and some of the last orders sent last year, could not all be executed. The terms, prices, charges and all desirable information will be found in his catalogue. The Trees will be shipped to the care of his agent, who will attend to the receiving and forwarding. For further particulars, and for the catalogue, apply to

E. BOSSANGE,

nov. 1-3t

138 Pearl street, N. York, Agent.

All agricultural papers will please insert the above three times, and send the bill and a copy of each paper to E. BOSSANGE.

Bone Dust and Poudrette.

BY the request of my customers, I have made considerable improvement in the machinery for GRINDING BONE, and am now prepared to furnish a fine article, which acts quicker and more powerfully, as I extract no glue from the Bone, or use any Chemicals, leaving the Bone Dust in its natural or pure state, weighing from 55 to 60 lbs. per bushel. The *Poudrette* is as good as can be made, and will be sold low. Apply by letter, or at the Factory on Harris' Creek, Baltimore, Maryland. THOS. BAYNES.

REFERENCE.

D. M. Perine, Lloyd Norris, Wm. Baker Dorsey,
G. W. Lurman, W. B. Stephenson, W. H. Ross,
J. Q. Hughlett, J. W. Randolph, Capt. C. Wright,
J. Tyson, Jr., T. Jef. Rusk, Wm. S. Bond.

N. B. Orders left with the Office of the Farmer will be attended to.

67—In December and January, I will sell my Bone Dust at 50 cts. per bushel. Oct. 1.

APPLE TREES.—A fine lot of Apple trees, which were exhibited at the State Fair—are now for sale by Nov. 1. E. WHITMAN, JR. & CO.

AGRICULTURAL IMPLEMENT DEPOT And Produce Store,

No. 95 LIGHT STREET WHARF,

And in front of the small wharf where the Hugh Jenkins, Cambridge and other steamboats start from daily.

TO facilitate and render this business more convenient for his customers and himself, the subscriber has taken a convenient and commodious Warehouse in Baltimore, as a depot and sale place for all the various Agricultural Implements manufactured at his shops in Carroll County; also, to sell the products of his Farms, Mill and Foundry.

The following articles of his own manufacture and produce, he will endeavor constantly to have there for sale, viz:

HORSE { Endless Chain or Tread, for 1, 2 or 3 horses.

POWERS { Levers for 2, 4 or 6 horses.

THRESHERS { With Separator and Fan attached.

{ With Separator only.

{ Without Separator.

Wheat Fans, Corn and Cob Crushers, Corn Shellers of various kinds, (very superior); Cattle for Hay, Straw and Fodder, (Richardson's patent); Cornstalk Cutter and Grinder, (a new and the best article now in use); Horse Rakes; Snot and Garlic Rubbers, (which is unequalled for its simplicity of structure and thorough operation on Wheat or Buckwheat); Clover Seed Hüllers; Ploughs of several kinds, but only such as are known to do the best work; Harrows and Cultivators, and various smaller implements for Garden and Field use.

Mumma's patent CONCAVE CYLINDER CORN SHELLERS, either for power or hand. It received at the late Fair in Balt. the first premium over all others. The peculiar structure of the Cylinder, allows it to take the end grains off the cob cleaner than any other machine, also separating the shelled corn and cobs. Also the Vertical Cylinder Corn Shellers, (all cast iron and of great strength) which will shell 100 bushels per hour.

The subscriber would now respectfully call prompt attention to the securing for the ensuing harvest, (which promises to be very heavy) a Horse Power and Threshing Machine, either with or without Cleaner, which for simplicity of arrangement, superior structure and materials, and cheapness of price, have never been equalled in this market.

N. B. Address me in Baltimore, or at my residence, New Windsor, Carroll Co., Md. Jy 1 JAS. C. ATLEE.



C. H. DRURY, Hollingsworth street corner of Pratt—Head of the Basin—having completed his establishment with Foundry connected, for the making of his own Castings, is prepared to furnish all varieties of AGRICULTURAL IMPLEMENTS and CASTINGS, made to pattern of the best material.

The following is a list of PLOWS kept constantly on hand: Davis, of the different numbers, for wrought and cast shears, S. & M., Chenoweth, Wiley, 2 and 3 furrow, No. 0, Hill side, No. 1 and 3 Connecticut—Beach Improved or Posey Plow, with common Davis cast shear—Self-sharpened or wrought shear—Corn Cultivators, plain and expanding—Tobacco do.—Wheat Fans—Corn shellers with double hopper—Old Vertical and Virginia sheller—Harrows—superior Pennsylvania made Grain Cradles—Revolving Horse Rakes—Cylindrical straw Cutters, &c. &c. Horse Power GRIST MILLS, a very useful and saving article, and coming into general use. **HORSE POWER AND THRESHING MACHINES**, of these I need not say any thing, as wherever they have been in use any time, they are preferred to all others.

C. H. D. will this year make a smaller size Power & Thresher, (price of Power, \$100, Thresher, \$50, Band, \$10, or when taken together, complete, \$150 cash.) Persons in want of Implements made of the best material, and put together in the strongest and best manner to answer the purpose for which they are intended, are invited to call on the subscriber. Jel

JAMES BAYNES, Wool Dealer,

Warehouse No. 105 Lombard st. near Calvert, Balto.

IS prepared at all times to give a fair market price for WOOL of all descriptions. He would recommend to farmers to be more particular in washing their Wool, and in getting it in good order before bringing it to market, to ensure them a fair price. The demand is good, and the probability is, that it will continue so the coming season. Those having wool to dispose of, are invited to give him a call before disposing of their fleeces. Any information as to putting it up for market, &c. will be freely given.

References—B. Deford & Co., and Wethered Brothers, Baltimore—Jas. Mott & Co., and Houston & Robinson, Philadelphia.

Ap. 1-1yr

E. WHITMAN, & Co's. Premium Corn Sheller. This is a new article, and superior to any other Sheller, for Horse Power, Price, \$35 and \$40.

E. WHITMAN, JR. & CO.

F. B. DIDIER.

T. TENANT DIDIER.

Maryland Agricultural Warehouse.

F. B. DIDIER & BRO.

(Successors to Hambleton & Didier.)

No. 97 NORTH PACA ST., NEAR FRANKLIN.

PARTICULAR ATTENTION.—The late annual Fair and Cattle Show of 1851, has again honored the Plow, which in their estimation merited a premium, viz: the celebrated Moore and Chamberlain Plow, better known as the Delaware. The undersigned have constantly on hand the above valuable Plow, together with others which received the Society's highest honors; the celebrated Thermometer Churn, which also received a premium, Corn Shellers, Cultivators, &c.

N. B. C. B. Rodgers' celebrated Steel extending Point and Share Plow, together with a new subsoil, on hand, to whose notice we respectfully invite the farming community.

N. B. We are agents here for the sale of Miller's celebrated Fruit and Ornamental Trees, the character of which needs no comment here. Catalogues for the same can be procured gratis, by calling on us in person or addressing us through mail.

F. B. DIDIER & BRO.

We are also agents for the sale of the Horseman's Hope, and Farmers Friend, a healing balm, which we guarantee to cure all diseases horses are heir to.

James Ringan's justly celebrated Genesee Fanning Mill, which requires only one-half the power necessary to operate other mills, and in cleaning has not its equal; for sale by us, the sole agents in Maryland.

Easton Fair, Talbot Co., Md., Nov. 15th, 1851, awarded us the first premium for our Steel Extending Point Subsoil Plow; also for Ox Yokes and Hames.

Farmers who think of purchasing Horse Powers and Thrashers, would do well to give us a call, having something new in this line, which we warrant in every point superior to any machine heretofore brought before the public, and sold for the low price of \$110, complete, with the exception of belting.

The Chain Pump so universally admired for its simplicity and cheapness, for sale by us at the rate of 50 cts. per foot beneath ground and \$3.50 for the necessary fixtures above; thus a well 20 feet deep would cost \$13.50.

N. B. We have in store Baugher & Frey's celebrated Vertical Sheller, warranted to shell 100 bus. per hour—price \$25; Straw Cutters, all of the most improved and approved kinds, of our own and of Eastern manufacture—prices varying from \$7 and upwards—the first price box will cut from 2 to 3 bus. per minute, large size Cutters in proportion; Corn and Cob Crushers, Wheat Fans, Wheat Drills, Corn Planters, Treaded Grain Mill, which we unhesitatingly pronounce the best Mill in use—we respectfully invite an examination before purchasing elsewhere; Chain Pumps, Water Rans, Patent Ladders, &c. dec. 1 F. B. DIDIER & BRO.

BONE DUST.

THE subscriber will furnish ground Bones, warranted free from every mixture, or the entire quantity forfeited, at 50 cents per bushel. Also a second quality article, composed in part of Bones, and in part of Flesh of Animals, being a quick and powerful fertilizer, at 35 cents per bushel.—Col. W. W. Bowie, the well known "Patuxent Planter," who receives his supply of bones from my Factory, says that the "bone dust at 50 cts. per bushel, was the best I ever saw."

Orders may be left at the "American Farmer's" office, directed to me, or at the Factory below the Race Course, Canton, near Baltimore, or on Alice Ann st. near the junction with the Railroad, and will meet prompt attention.

None of my manufactured Bone Dust is sold except at my Factory. JOSHUA HORNOR.

My second quality is a new article of manure; I commenced making it from reading that portion of Dr. Higgins' report, in which he advises farmers not to buy made up or compound manures, but to make their own, viz: to procure the offal of the slaughter houses, &c. and boil the same and mix it with their barn-yard manure.—The article I offer to the public is made from the flesh of animals boiled, mixed with plaster and charcoal, to preserve the ammonia—lime, soda, and ashes, are also used in small proportions, in the process of manufacture—it is put up in pie, under cover, for 6 to 9 months, the whole mass is then mixed with an equal quantity of ground bones.—There is no grand secret in this preparation—it is a substantial, quick and powerful manure, combining the durability of bones with the immediate action of guano, and hardly second to the latter, for insuring an immediate return for the investment. J. H.

I furnish to my customers, when bags are not sent, 2 bushel bags, at 6 cents each.

Reference.—Messrs. Randolph, Golihart & Co., 158 Thames street. aug. 1-61*

PROSPECTUS FOR 1852.

THE SATURDAY EVENING POST, THE LEADING LITERARY WEEKLY OF THE UNION.

The proprietors of the *POST* think it unnecessary to dwell upon the distinguishing features of their well known weekly, whose brilliant success during an existence of THIRTY YEARS is a sure guarantee for the future. We have the pleasure of announcing our continued connection with that distinguished authoress,

MRS. E. D. E. N. SOUTHWORTH,

author of "The Deserted Wife," "Shannondale," &c. During the coming year, we have already made arrangements for the following nouvelles:—

EOLINE; OR, MAGNOLIA VALE:

By *MRS. CAROLINE LEE HENTZ*, author of "Linda," "Rena," &c.

Viola; or, Adventures in the Southwest:

A COMPANION TO "PRAIRIE FLOWER." By *EMERSON BENNETT*, author of "Prairie Flower," "The Bandits of the Osage," &c.

TRIAL AND TRIUMPH:

By *T. S. ARTHUR*, author of "The Iron Hand," "Temperance Tales," &c. And last, but not least,

THE CURSE OF CLIFTON,

A TALE OF EXPIATION AND REDEMPTION. By *MRS. E. D. E. N. SOUTHWORTH*, author of "The Deserted Wife," &c. &c.

The *POST* also will contain every week Selected Articles of the choicest description, One or More Engravings, Humorous Articles, the Most Interesting News, Local News, Bank Note List, State of the Markets, The Stock Market, etc. etc.

TERMS.—The terms of the *POST* are Two Dollars if paid in advance, Three Dollars if not paid in advance. For Five Dollars, in advance, one copy is sent three years. We continue the following low terms for Clubs, to be sent, in the city, to one address, and, in the country, to one post-office:—

4 COPIES	\$5 00 PER ANNUM.
8 " (And one to Agent, or the getter-up of the Club,)	\$10 00 "
13 " (And one to Agent, or the getter-up of the Club,)	\$15 00 "
20 " (And one to Agent, or the getter-up of the Club,)	\$20 00 "

The money for Clubs must always be sent in advance. Subscriptions may be sent at our risk. When the sum is large, a draft should be procured if possible—the cost of which may be deducted from the amount.

Address, always post-paid,

DEACON & PETERSON,

NO. 66 SOUTH THIRD STREET, PHILADELPHIA.

P. S.—A copy of the *POST* will be sent as a specimen to any one requesting it.

Dec. 1-2t

4000 TONS PERUVIAN GOVERNMENT GUANO on hand, and to arrive.—500 tons **PATAGONIAN**—for sale by **S. FENBY & BRO.** Corner of Gay and Pratt streets, Baltimore.

S. Fenby & Bro. are now prepared to make contracts for further delivery for Fall seeding, and having arranged for their supply of Guano arriving early in the season, purchasers can rely on not being disappointed. A large amount of Guano intended for the Fall crop will not arrive in the United States until late in the autumn.

Jy-1.



A. G. MOTT,
AGRICULTURAL IMPLEMENT
MANUFACTURER,

No. 36 Ensor street, near the Belair Market, Baltimore. Plows, Cultivators, Harrows, Wheat Fans, Straw Cutters, Grain Cradles, and all of the best and most approved Agricultural Implements in use.

AGENTS for the celebrated N. York Wiley and Empire Plow Castles

THERMOMETER CHURNS—For sale by
oct. 1 **E. WHITMAN, JR. & CO.**

A Card to Farmers.

THE subscriber would respectfully inform Farmers and others interested, that he is now manufacturing a "FERTILIZING COMPOUND" of very superior quality, (the base being Bones dissolved in Sulphuric Acid, with the addition of Soluble Salts of Ammonia, Potash, Soda, Magnesia, &c.) and offers it for sale in quantities to suit purchasers, at \$3 per barrel of 300 lbs., and warranted of great fertilizing power and durability.

WM. TREGO, Manufacturing Chemist,
Office N. W. cor. Baltimore and North sts.
aug. 1-4t* Factory on Hughes st. S. side of Bashi.



J. T. WATKINS,

FEATHER BEDS,

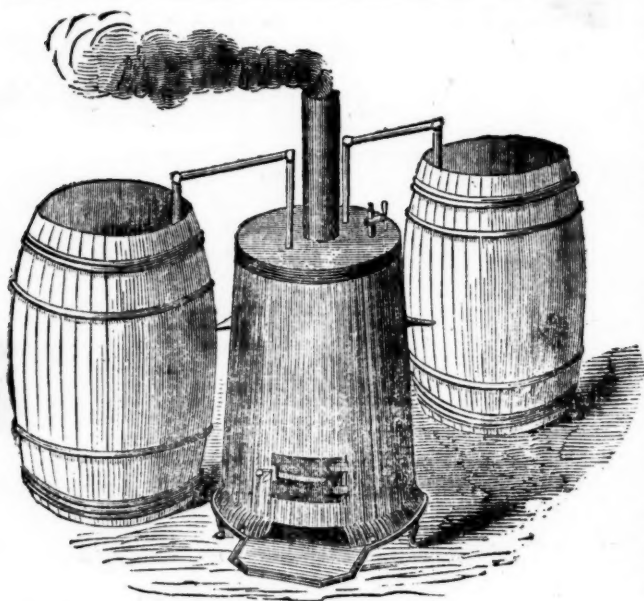
CURL-HAIR MATTRESSES,
FURNITURE AND VARIETY STORE, &c.

No. 47 South street,

Between Lombard and Pratt street,

Ap. 1-1yr

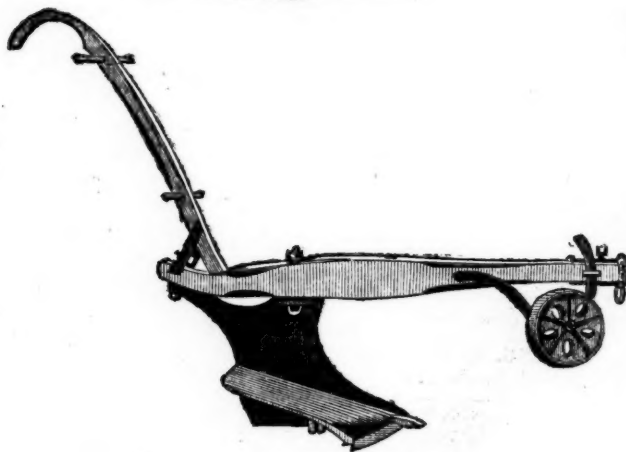
BALTIMORE.



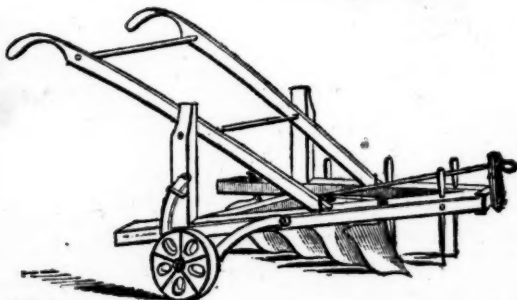
C. B. ROGERS'
Seed and Agricultural
WAREHOUSE,
No. 29 Market st. Phila.
 Where he has on hand and
 intends keeping for sale at
 the lowest market prices
 for Cash, a general assort-
 ment of Grass and Garden
SEEDS, Agricultural and
Horticultural IMPLE-
MENTS, &c. &c.

The annexed cut repre-
 sents an **AGRICULTU-**
RAL FURNACE, which
 is so arranged as to cook
 the largest amount of food
 with the least possible a-
 mount of fuel. By this
 Furnace, from 10 to 20
 bushels of feed can be
 cooked twice a day. For
 the advantages of cooking
 food for hogs, I refer you
 to the experiments of the
 Commissioner of Patents,
 who, in various experi-
 ments saved from 30 to 50
 per cent. in food well cook-
 ed over raw food.

The cost of cooking corn
 by this Furnace, will not
 exceed 3 cts. per bushel.



New Pattern CAST
STEEL EXTENDING
POINT SUBSOIL
PLOW, which has never
 failed to give satisfaction
 to those that have used
 them. Price \$8 to \$12.



The annexed represents a **HARROW**
CULTIVATOR AND SEEDER, a new
 article. In it we have combined the
 Gang Plough and Cultivator. Price \$8
 to \$10.

All orders addressed to the subscri-
 ber, will receive prompt attention.

C. B. ROGERS,
 dec. 1 29 Market st. Philadelphia.

Important to Farmers and Machine Makers.

THE subscriber respectfully informs the public that he has lately completed a **TRIPLE REACTING INTERNAL GEARED HORSE POWER**, which outvalues any in use.—It is made entirely of iron, both frame and Gearing. The Journals are made of Cast-steel—its weight is 600 lbs. On trial it has proved itself capable of performing from 50 to 100 per cent. more work than other Powers with the same labor of the team. It is warranted to hold 8 horses.

I have also completed a combined **THRESHER AND CLEANER**, which is capable of Threshing and Cleaning from 300 to 500 bushels of wheat per day, with from 6 to 8 Horses and an equal number of hands.—4 horses can thresh with it from 100 to 200 bushels per day of wheat, and 400 to 500 of oats. It is very convenient for those who follow Threshing, and for two or more farmers to own in company. It is more convenient to move than any machine in use. The Machine stands on the wagon while threshing—the Power is loaded on the same wagon in moving—two horses are sufficient to move it; it will save enough labor in threshing 200 bushels to pay its extra cost. It will thresh in a field or in a stack as conveniently as in a barn. The cylinder and concave can readily be adjusted so as to thresh with equal facility both tough and dry grain.—it is free from the complication and liability to get out of order of other machines of the kind, and of less cost.

Machine makers supplied on the most reasonable terms. Powers made by wholesale by I. W. Groff, Lancaster, Pa.—Threshers, Machines, &c. made and for sale by Jeffrey Smalley, Columbia, Pa.

All orders directed to the subscriber at Lancaster, Pa., will be promptly attended to.

SAMUEL PELTON, Jr.

Also for sale by E. Whitman, Jr. & Co., Baltimore. Jy. 1-ly

Peruvian Guano, versus Kentish's Prepared Guano.

TESTIMONY of Dr. J. H. Bayne, of Prince George's Co. Md., a well known and intelligent agriculturist. Extract of a letter from E. B. Addison, Alexandria, Va.

"Dr. J. H. Bayne authorizes me to say, that in the spring of 1850, he planted his potatoes, side by side, as follows: on a given number of rows he used Poudrette, on a like number, African Guano, Peruvian Guano, and your Prepared Salts. The first two were distanced, but with the Peruvian and your Prepared Guano it was "neck and neck." He pronounced yours, "an excellent article and extends it highly."

Norfolk, Va., 2d July, 1850.

Sir—I have used your Prepared Guano on peas and potatoes, with great success, and I give it the preference to any manure I have ever employed.

E. M. MARCHANT.

To Mr. C. A. Kentish.

I would also refer to the following, amongst hundreds of other gentlemen, as to the superiority of my Prepared Guano. Hon. Wm. C. Bradley, Westminster, Vt. W. O. Platt, Editor of the Vermont Phoenix, Brattleboro' Vt. Church Miller, Brattleboro', Vt., on Corn. Seth Perkins, near the Court-house, Fairfax Co. Va., on Corn.

POTATOE ROT.

White Plains, Westchester Co., N. Y.

I have used "Kentish's Prepared Guano" this season on potatoes. My crop was large and all sound. Where I did not use it, the potatoes were all rotten and worthless. My neighbors also, who have not used this Fertilizer, have not raised a saleable potatoe this year. I consider it a preventive of Rot!

G. PREAUT.

Sept. 28, 1850.

Price, \$30 per ton, for sale by CHAS. A. KENTISH,

Jy. 1-61

40 Peck Ship, N. Y. City.



WILLIAM HARRIS, GUN, RIFLE AND PISTOL MANUFACTURER, No. 65 South St. Baltimore.

Keeps constantly on hand a large assortment of Bird and Ducking Guns, (double and single barrells). All Guns warranted to shoot correctly. Also, Pistols of every style and finish, such as Revolvers, Self-cocking Rifle Barrel. Rifles of very superior quality at reduced prices. My stock comprises every article in the sportsman's line. Diamond grain Powder; Dupont's and Beatty's Powder; Revolving Pistol Percussion Caps; Military Percussion Caps, for muskets and U. S. pistols. Guns Stocked and Repairing done with neatness and despatch. Persons desiring to purchase any article in the above line, would do well to give me a call.

Sept. 1-61

CORN SHELLERS.—A great variety of Corn Shellers of all the various kinds now in use, for sale by E. WHITMAN, JR. & CO.

oct. 1

55 Light street, Baltimore, Md.

BENJAMIN WILLIAMS, Commission Merchant and Dealer in Wool, No. 126 Lombard street, between Charles and Light street, BALTIMORE.

CASH and the highest market price paid for all descriptions of WOOL and DRIED SHEEP SKINS. Wool and Country Produce received and sold on commission. Refer to—

Messrs. Duvall, Keighler & Dorsey,
" Duvall, Rogers & Co.
" Wm. Woodward & Co.
" Thos. Whitridge & Co.
" William Cooke & Sons,
" Ward & Brothers,

BALTIMORE.

Mr. George Williams,
Messrs. J. D. & M. Williams,
Mr. John Williams,

BOSTON. Jy. 1-61*

GUANO---GUANO.

THE subscribers have now in store supplies of Peruvian and Patagonian GUANO, which they will sell in lots to suit at the very lowest market rates.

They are expecting further arrivals of Peruvian about 1st August, and also about 1st September, and are now prepared to contract with farmers for their fall supplies, deliverable from ship at those periods—thus saving the purchaser a heavy charge for transportation.

Ground PLASTER in barrels.

GIROUX BONE, pure.

Clover and Timothy SEED.

KETTLEWELL'S RENOVATOR.

REYNOLDS' CORN SHELLERS.

FISH, BACON, TAR and SALT.

Jy. 1 W. WHITELOCK & CO. cor. Gay and High sts.

CHICKERING'S PIANOS.

THE Subscriber is Sole Agent in Baltimore, for the sale of CHICKERING'S CELEBRATED IRON FRAMED GRAND AND SQUARE PIANO FORTES, and is constantly receiving supplies from the factory in Boston, which are sold at the same prices as charged by Mr. Chickering.

Chickering's Pianos are unquestionably the best Instruments manufactured in the United States. In regard to superior quality of tone, touch, durability, and all the essential qualities of a Piano, they are admitted by the most eminent Pianists to be equal to Erard's, of Paris, or Broadwood's, of London.—Although there are several factories in Boston and New York of high reputation, Mr. Chickering undoubtedly stands at the head, possessing eminent talent, skill, untiring industry and experience of some 35 years as a manufacturer of pianos, with abundant means to enable him to carry out his plans in producing the very best Instruments.

Orders from the country, entrusted to the subscriber, either for Pianos, Music, or any article in his line of business, will be faithfully executed.

Jan. 61

F. D. BENTEN,

181 Baltimore street.

A. E. WARNER, No. 10 N. Gay st.

MANUFACTURER OF SILVER WARE, FINE GOLD JEWELRY, and importer of BEST SILVER WARE, FANCY ARTICLES, &c. would respectfully invite the attention of those in want of any of the above articles, that he keeps always on hand, and makes to order, every variety of Silver Ware, fine Gold Jewelry, and best quality Silver Plated Ware, which he will sell on the most accommodating terms.

Feb. 1-1f

LIME—LIME.

THE undersigned having purchased of E. J. Cooper the most extensive Lime Burning Establishment in the State, is now prepared to supply Agricultural and Building LIME, of superior quality, to farmers and others, on accommodating terms, from his Yard, at the City Block, or delivered at the several landings on the Chesapeake Bay and its tributaries, and pledges himself by strict attention and punctuality, and a determination to do justice, to merit a liberal share of patronage. Any orders addressed to him through the Baltimore Post Office, or left with C. W. BURGESS & CO., No. 60 South street, one door above Pratt, will be promptly attended to.

Feb. 1-ly

JAMES L. SUTTON.

LIME.

THE subscribers are prepared to furnish Building and Agricultural Lime at the depot on the Back Basin, corner of Eden and Lancaster-sts., which they will warrant to give satisfaction, it being burnt from pure Alum Lime Stone, equal to any found in the United States. Orders may be left with WILLIAM ROBINSON, No. 15 Hollingsworth-street, near Pratt.

tf FELL & ROBINSON, City Block.



FOR the information of Farmers and Planters preferring PREMIUM IMPLEMENTS, we give the following list, remarking, however, that premiums on implements, like essays on agriculture, are not to be regarded according to the letter, but should only be respected as an *exterior*, requiring their own judgment and experience to decide properly relative to the merits of Plows and Machinery wanted, and the reputation of those from whom they may purchase.

ORDERS for any article in our line will receive PROMPT ATTENTION, and if allowed to exercise our judgment, will furnish implements of the *most approved description*, and *warrant* the performance.

R. SINCLAIR, Jr. & Co. Baltimore.

Premiums received this fall as follows, viz:

For the best Sweep Horse Power 2 premiums awarded to SINCLAIR & Co.

Railway or Endless Chain Horse Power, premium to SINCLAIR & Co.

For the best Threshing Machine, 2 premiums to SINCLAIR & Co.

For the best Domestic Grist Mill, 2 premiums to SINCLAIR & Co.

For the best Broad-cast Drill for Scattering Lime, Guano, Plaster, Chemical Manures, Grass Seeds, &c., to SINCLAIR & Co.

For the best Corn and Seed Drill, 2 premiums to SINCLAIR & Co.

For the best Straw and Fodder Cutter, to SINCLAIR & Co.

For the best 2 horse Plow for the Md. river lands—the Patuxent, No. 10—to SINCLAIR & Co.

For the best 1, 2 and 3 horse Plows, 5 premiums to SINCLAIR & Co.

For the best Gang or Echelon Plow, to SINCLAIR & Co.

For the best Harrow, 3 premiums to SINCLAIR & Co.

For the best Grain Cradle, 2 premiums to SINCLAIR & Co.

For the best Corn and Cob Crusher, to SINCLAIR & Co.

For the best Chain Pump, to SINCLAIR & Co.

For the best Vegetable Cutter, to SINCLAIR & Co.
For the best Wheat (rolling) Screen, to SINCLAIR & Co.

For the best Clover Seed Gatherer, to SINCLAIR & Co.

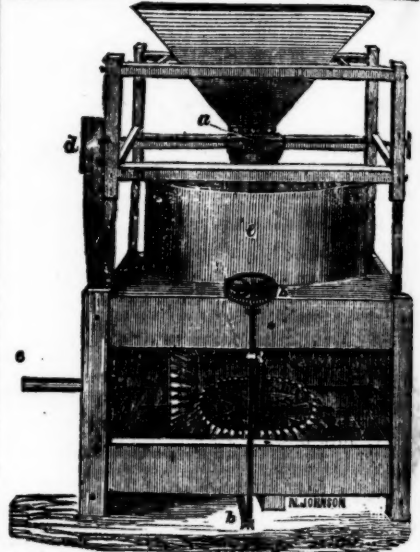
For the best Clover Seed Thrasher and Cleaner, to SINCLAIR & Co.

For the best Churn, 2 premiums to SINCLAIR & Co.

For the best Cultivator, to SINCLAIR & Co.

For the best Subsoil Plow, to SINCLAIR & Co.

And by the Marlboro' Ag. Society, for the *largest and best display of Agricultural Implements*, to SINCLAIR & Co. dec. 1



THE above Fig. shows the construction of our Patent Cologne and French Burr Mills, and the same that received the *First Premium* from the Md. State, and Talbot Co. Agricultural Societies, held last October and November.

For domestic use, the 30 Inch Mills are generally preferred, which size affords sufficient surface for making good corn meal, chopping for horse feed, &c.

The power required to drive the 30 Inch Mill is 4 horses or 6 mules.

Price for 30 Inch Cologne Mill,	\$110
“ a French Burr,	135
“ Hand Power, Roman,	40

Prices for larger or smaller sizes—in proportion. For sale by
R. SINCLAIR, Jr. & CO.,
Manufacturers and Seedsmen, Balto.
dec. 1

AGRICULTURAL IMPLEMENTS.—LABOR SAVING MACHINERY.—GEORGE PAGE, Machinist & Manufacturer, Baltimore, West of Schröder st. Baltimore, is now prepared to supply Agriculturists and all others in want of Agricultural and Labor-saving MACHINERY, with any thing in his line. He can furnish Portable Saw Mills to go by steam, horse or water power; Lumber Wheels; Horse Powers of various sizes, ranging in price from \$85 to \$200, and each simple, strong and powerful. His *Horse Power & Threshing Machine*, he is prepared to supply at the low price of \$125 complete; the Threshing Machines without the horse power, according to size, at \$30, 40, 65 and \$75; Improved Seed and Corn Planters; Portable Tobacco Press; Portable Grist Mills complete, \$150

Baltimore Premium Plows.

AMONG the great variety of Plows exhibited at the Maryland State Fair, October, 1851—consisting of some two hundred varieties—including nearly every Plow in use, E. WHITMAN, Jr. & Co. were the successful competitors—carrying off the Society's First Premium, for one of their own make of Plows. dec. 1



\$50,000 AGRICULTURAL IMPLEMENTS

WERE exhibited at the Maryland and Pennsylvania State Fairs held in October, 1851. These Fairs being open to competitors from all parts of the world, brought together the largest display of Farm Implements ever witnessed in this country, among which are to be seen Implements from all parts of the United States. After several days strict examination, the following awards were made, viz: The Maryland State Agricultural Society

AWARDED E. WHITMAN & CO.

For the best Plow,	\$5 00
“ “ Farm Wagon,	8 00
“ “ Wagon Harness,	4 00
“ “ Horse Cart,	5 00
“ “ Cart Gear,	4 00
“ “ Cornsheller,	4 00
“ “ Corn and Cob Crusher,	5 00
“ “ Butter Churn,	4 00
“ “ Portable Smith's Forge,	6 00
“ “ Chain Pump,	2 00
“ “ Hay Press,	25 00
“ “ Hydraulic Ram,	3 00
“ “ Specimen of Drain Tile,	2 00
“ “ Hog Trough,	3 00
Premium in Plowing Match,	8 00
“ “ “ “	6 00

For the Largest and Best Display of Agricultural Implements, the Highest Prize of 30 00

Also a Certificate of Pre-eminence for their Wrought Iron Rail-way Horse Power, which is the highest honor the Society can bestow upon any implement.

The Pennsylvania State Agricultural Society
AWARDED E. WHITMAN & CO.

For the best Hay Press,	\$20 00
“ “ Sweep Horse Power,	10 00
“ “ Reaping Machine, (McCormick's,)	10 00

For the Largest and Best Display of Agricultural Implements, 20 00

Also, for their superior Plough, a Diploma
“ “ “ “ Straw Cutter, a Diploma.
dec. 1

Macomber's Patent Straw Cutter,

AN entirely new principle. It has but one knife, which never moves, and seldom needs grinding—it feeds itself, and makes sixteen cuts at one revolution of the crank. It will cut a bushel per minute, and is the most simple and strongest machine that has ever yet been manufactured, and the price is less than most other machines.

Also, the Cylindrical and various other Straw, Hay and Fodder Cutters, for sale by

dec. 1 E. WHITMAN, JR. & CO. 55 Light st., Balto.

BAMBOROUGH'S CELEBRATED WHEAT FANS, which have taken 45 First Premiums, and have again received the Certificate of Pre-eminence from the Maryland Agricultural Society this season, are for sale in Maryland only by

E. WHITMAN, JR. & CO.

55 Light street, Balto.

PREMIUM HAY PRESS.—The Hay Presses which received the First Premium from the Maryland and Pennsylvania Agricultural Societies, in Oct. 1851, are for sale by

E. WHITMAN, & CO.

55 Light street, Balto.

Plowing Match.

AT the Maryland State Fair, 1851, thirteen Flows were entered and contended for the Premiums. The only successful Baltimoreans were E. WHITMAN, JR. & CO., who entered two Flows, and received two of the premiums offered by the Society.

Nov. 1.



C. B. ROGERS'
Seed and Agricultural
WAREHOUSE,

No. 29 Market st. Philadelphia,

HAS constantly on hand and is manufacturing all the most approved Implements of Agriculture. Dealer in Imported and American Grass and Garden SEEDS, of his own raising. Fruit and Ornamental Shade TREES.

Also, Guano, Poudrette, Bone Dust, Native Phosphate of Lime, Soda, Salt, Chemical Residuaums, and the most approved Chemical FERTILIZERS.

In addition to the great variety kept in Agricultural stores, he has a number of new and valuable articles, he is the inventor and the only manufacturer of—among which is Rogers' Cast-steel extending point Self-sharpening FLOWS, which is yet unequalled; twelve different kinds of CULTIVATORS, adapted to every different kind of cultivation and seeding, which only wants to be seen to be appreciated; Revolving Clover Seed COLLECTORS; improved horse and hand power Thrashers, Planters and Corn Shellers. All of which will be sold on the lowest terms, by

sept. 1-1f C. B. ROGERS, No. 29 Market street.

Artificial Guano.

THE undersigned having been engaged in the manufacture of the above article, and also tested its applicability to almost every kind of soil, would respectfully inform the Farmers that they can be supplied with any reasonable quantity, at short notice, by sending their orders to No. 61 Calvert street, Balto. It is much stronger than the Peruvian, (having been tested along with it,) and can be furnished at nearly half the price of the latter article. It can be prepared on the farm. Give it a trial.

Oct. 1-1f. WM. L. BATEMAN.

GUANO—GUANO.

500 TONS PERUVIAN GUANO, direct importation, and warranted equal in quality to any in the market. The Guano is put up in good strong bags, and is in fine shipping order. For sale in lots to suit purchasers, at the lowest market rates, by

WM. ROBINSON, No. 4 Hollingsworth st.

near Pratt st. wharf, Baltimore, Md.

Also, PATAGONIA GUANO, BONE DUST, Building and Agricultural LIME, for sale on the best terms. je. 1-1f

BOOK-BINDING.

WILLIAM C. LYCETT, No. 125 BALTIMORE-ST.,

Opposite the American Farmer office,

WILL execute all orders in the above business with promptness, in a neat and substantial manner, and in every variety of style, in full or half bound Tur. Morocco, Russia, Calf, Sheep or Muslin at the lowest possible rates, such as Bibles, Magazines, Music and old Books carefully mended or re-bound.

Feb. 1-coly

Roslin For Sale at Auction.



THIS beautiful and once highly cultivated estate, containing in forest, fields and meadows, Twelve Hundred and Eighty-Two Acres—lies in sight of Petersburg, on the Appomattox River, in the County of Chesterfield. Admitting of convenient division into several farms and wood lots, it will be sold in parcels.

Persons desirous to purchase land are invited to examine it. The sale will take place on the premises, on the 14th and 15th days of November next.

It will be shown and its several parcels pointed out, and the terms of sale made known by the undersigned.

JAMES ALFRED JONES,
Attorney for Miss Gamble.
JOSEPH E. COX,
Agent for Mr. Leslie.

POSTPONEMENT.

In consequence of a disengagement in procuring, in time for exhibition, surveys and maps of the several parcels, in which it is proposed to sell Roslin, the sale is postponed until the 12th and 13th days of December. d. I. J. A. J.

Horne's Prepared Animal Manure.

THE subscriber asks the attention of the farming community to the following analysis by Dr. Jas. Higgins, State Chemist, and comparison between his prepared Animal Manure, and Patagonian and Peruvian Guano. It is necessary for a full understanding of the comparison, to state, that his Compound costs but 35 cts. per bushel, or \$12 per ton.—This preparation has been used with much success on the tobacco crop, and testimonials from Mr. Reynolds, Mr. R. H. Hare, Col. Bowie, and other well known planters and farmers, who have purchased it for Corn, Wheat, Tobacco, and spring crops generally, can be produced as to its efficiency, by practical tests.

For further particulars, see advertisement in another part of this paper. dec. 1 JOSHUA HORNER.

LEONARDTOWN, Oct. 7th, 1851.

To Mr. J. HORNER, Baltimore.—Dear Sir:—Below I send you a statement of your Manure as to its essential valuable constituents, and the relation which it bears to Patagonian Guano. A ton of your manure contains of

Ammonia,	54 34-100 pounds
Phosphate of Lime,	528 do
The average of Patagonian Guano by the ton, as it is sold,	
contains of	
Ammonia,	60 pounds
Phosphate of Lime,	800 do

Estimating Patagonian Guano and your Manure by the same rule as to the value of the several constituents, the Patagonian Guano would be worth \$19.20 per ton, and your Manure \$14.44. If Patagonian, therefore, be worth \$35 per ton, your Manure is worth about \$28.50 per ton.

THE VALUE OF PATAGONIAN GUANO AND YOUR MANURE, I DETERMINE BY THE AGGREGATE VALUE OF THEIR SEVERAL VALUABLE CONSTITUENTS, and by the same rule which would make Peruvian Guano worth \$46 per ton. Your Manure also contains 122 pounds of Gypsum, 114 pounds of Salts of Potash and Soda, and 300 pounds of Lime to the ton, being about equal to Patagonian Guano, of average quality, in these constituents. Very truly yours, &c.,

JAMES HIGGINS, St. Ag. Chemist.

P. S.—You can make what use you please of this.

Water View For Sale.



THIS FARM, formerly owned by John Gritcher, Esq., is in the lower end of Westmoreland County, Va., and lies immediately on the Potomac River; by recent Survey, containing 432 ACRES. The land is of superior quality, well adapted to Corn, Wheat and Grass—it is susceptible of a high state of improvement. There is a sufficient quantity of Wood for all necessary purposes—a fine growth of Locusts and Cedar.

There are two never failing Pumps of very superior water; one in the yard, and the other at the Barn. There are two very fine Orchards of Peaches and Apples, besides other fruits. The Garden Spot is not surpassed by any in the Lower Country—is convenient to Piney Point Market, being nearly opposite. The Dwelling House has been thoroughly repaired, and is now very comfortable; it has five Rooms, besides a large Parlor and Entry; the out-houses have also been repaired, and are in good order. There is a good Overseer's House, in good order, in the centre of the Farm. There is a very large, spacious Brick Barn with five large Rooms, a Carriage Room and Stable, said to be the best Barn in the Northern Neck.

WATER VIEW is considered as healthy as any other farm on the Potomac. Persons wishing to buy, will of course

examine for themselves—it will afford me pleasure to show the farm to any person wishing to buy. There is also a very fine Fishing Shore attached to the farm—there have been larger hauls of fish made on this shore than any on the Potomac,—and if properly managed, no doubt would be very profitable. The Steamer "Columbia" calls regularly twice a week at Sandy Point, within a few minutes walk of this place. There will be seeded about 130 or 140 bushels of prime Wheat this Fall, mostly on fallow.

TERMS will be accommodating. Address, if by mail, the subscriber at the Hague Post Office, Westmoreland Co., Virginia. J. S. BAILEY.

WATER VIEW, Hague P. O., Westmoreland Co. N & D.

Calystegia Pubescens—New Hardy Climber.



THE new and elegant climber, recently introduced from China by Mr. Fortune, grows perfectly hardy in New England, having stood in the grounds here for two winters without protection. Trained to a single pillar, say ten feet in height, it is a very striking and beautiful object from June till cold weather, during which time it is covered with a profusion of its large double flowers of a delicate rose color. It is very ornamental planted in patches like Verbena; makes an admirable screen—and is very effective in young plantations, belts or shrubberies, trailing prettily on the surface, and running among the lower branches of the trees in a very picturesque manner. Its culture is very simple, and it will thrive in common garden soil. If required in considerable quantities, the tubers may be divided into single eyes, planting each in a four inch pot of good light compost, in February, under glass, or in hot beds in the spring; or large pieces containing several eyes may be planted in the open ground in May.—Plants, \$3 per dozen. Tubers for 100 plants, \$3, which may be sent by mail or express, to order.

Also every description of Fruit and ornamental Trees and Shrubs, Strawberries, Dahlias, Roses, Verbenas, Chrysanthemums, &c., with every new variety of the present season. Stocks for Nurserymen and Amateurs, both Fruit and ornamental, of every description. Pear Seed of first rate quality. Address B. M. WATSON, Plymouth, Mass.

Carriage paid to Boston.—Catalogues sent post paid, on application. Oct. 1-3

Look out Dairymen

I offer for sale my thorough bred Alderney BULL, Patrick. He is offered for no fault, but because the undersigned intends to abandon agriculture in the spring. He was purchased by me of Mr. R. L. Colt, Patterson, N. J., and is immediate in descent from the importation of the late Nicholas Biddle. He has taken the premium at the American Institute, N. Y. four years in succession, from a calf to a four year old bull. He also took the premium at the late meeting of the Valley Agr. Society of Va. Those who wish to purchase will either refer to Aaron Clement, of Philadelphia, or the undersigned, at Summit Post P. O., Jeff. Co., Va. dec. 1-4f R. S. BLACKBURN.

ORANGE SEED—Saved with great care, and reliable quality, for sale by L. S. HOYT, Dec. 1-3f 55 Water street, New York.

CHAIN PUMPS—For sale by E. WHITMAN, JR. & CO. dec. 1 A Pure 2½ yr. old Devon Bull for sale—Apply at this office.

Dana's Muck Manual, new edit., for sale at this office.

CONTENTS OF THE DECEMBER NO.

Improvement of Cotton and Corn Land in N. Carolina, by Paula,	197	Importation of Sheep, Horner's Manure,	211
Salt, Plaster and Ashes on Meadows,	201	Implement makers, Saturday Post,	213
Farm Work for Dec. Garden do.	203	American Pomologist, Markets, &c.	215
Corn and Potatoes in rows, Effects of Irrigation, Transactions of N. Y. Soc. Top-dressing guanoed lands with plaster, &c.	204, 212	Pamunkey five field s/s/m, Charcoal, plaster and guano for a top dressing, Culture of Broom Corn, Keeping Sweet Potatoes, Great Crops of Corn, Hogs, live and dead weight, Culture of Lucerne in France,	217, 219, 221, 223
Value of Bones as manure, Profit on an acre Carrots, Report on Engines, To protect trees, Culture of the Rose, Grape blight in Italy, On Marling, by Mr. Ruffin, To Correspondents, Floral Department, A beautiful picture, Agricult. Soc. Exh's, Wheat and Grass Cutters,	204, 206, 207, 208, 211, 212, 211, 211, 212, 213	Guano in comp. for Corn, Value of Phosphates, Fruit Trees, diseases, Staking Lime with Salt, Dimens' of corn houses, Manuring for Wheat in Scotland, Planting Peach Seed, Asparagus beds,	225, 227, 229, 231, 233, 235, 237, 239, 241, 243, 245, 247, 249, 251, 253, 255, 257, 259, 261, 263, 265, 267, 269, 271, 273, 275, 277, 279, 281, 283, 285, 287, 289, 291, 293, 295, 297, 299, 301, 303, 305, 307, 309, 311, 313, 315, 317, 319, 321, 323, 325, 327, 329, 331, 333, 335, 337, 339, 341, 343, 345, 347, 349, 351, 353, 355, 357, 359, 361, 363, 365, 367, 369, 371, 373, 375, 377, 379, 381, 383, 385, 387, 389, 391, 393, 395, 397, 399, 401, 403, 405, 407, 409, 411, 413, 415, 417, 419, 421, 423, 425, 427, 429, 431, 433, 435, 437, 439, 441, 443, 445, 447, 449, 451, 453, 455, 457, 459, 461, 463, 465, 467, 469, 471, 473, 475, 477, 479, 481, 483, 485, 487, 489, 491, 493, 495, 497, 499, 501, 503, 505, 507, 509, 511, 513, 515, 517, 519, 521, 523, 525, 527, 529, 531, 533, 535, 537, 539, 541, 543, 545, 547, 549, 551, 553, 555, 557, 559, 561, 563, 565, 567, 569, 571, 573, 575, 577, 579, 581, 583, 585, 587, 589, 591, 593, 595, 597, 599, 601, 603, 605, 607, 609, 611, 613, 615, 617, 619, 621, 623, 625, 627, 629, 631, 633, 635, 637, 639, 641, 643, 645, 647, 649, 651, 653, 655, 657, 659, 661, 663, 665, 667, 669, 671, 673, 675, 677, 679, 681, 683, 685, 687, 689, 691, 693, 695, 697, 699, 701, 703, 705, 707, 709, 711, 713, 715, 717, 719, 721, 723, 725, 727, 729, 731, 733, 735, 737, 739, 741, 743, 745, 747, 749, 751, 753, 755, 757, 759, 761, 763, 765, 767, 769, 771, 773, 775, 777, 779, 781, 783, 785, 787, 789, 791, 793, 795, 797, 799, 801, 803, 805, 807, 809, 811, 813, 815, 817, 819, 821, 823, 825, 827, 829, 831, 833, 835, 837, 839, 841, 843, 845, 847, 849, 851, 853, 855, 857, 859, 861, 863, 865, 867, 869, 871, 873, 875, 877, 879, 881, 883, 885, 887, 889, 891, 893, 895, 897, 899, 901, 903, 905, 907, 909, 911, 913, 915, 917, 919, 921, 923, 925, 927, 929, 931, 933, 935, 937, 939, 941, 943, 945, 947, 949, 951, 953, 955, 957, 959, 961, 963, 965, 967, 969, 971, 973, 975, 977, 979, 981, 983, 985, 987, 989, 991, 993, 995, 997, 999